Figure 1

Figure 2

Figure 3

Injection of TCR at 43μM

A2 FLU 4740 RU

A2 FLU 2957 RU
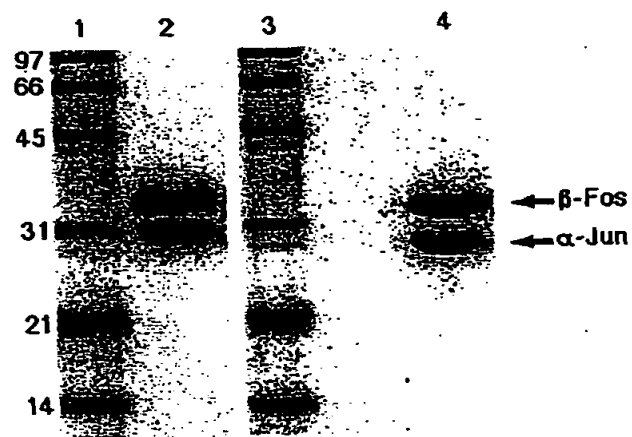
A2 POL 3770RU

FIGURE 4
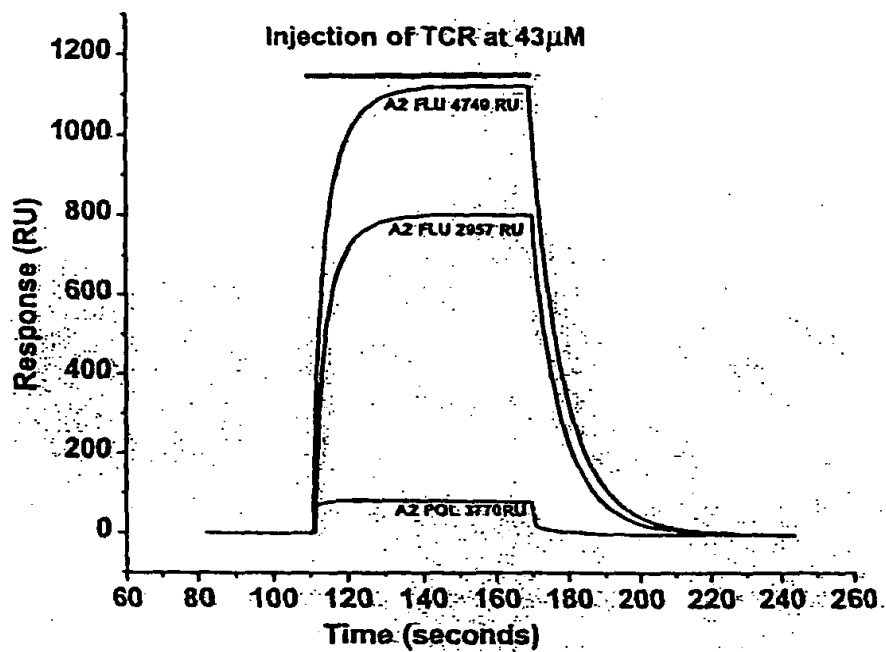
```
   TCR alfa>
   M  Q  L  L  E  Q  S  P  Q  F  L  S  I  Q  E  G  E  N  L  T
ATGCAaCTaCTaGAaCAaAGtCCTCAGTTTCTAAGCATCCAAGAGGGAGAAAATCTCACT


   V  Y  C  N  S  S  S  V  F  S  S  L  Q  W  Y  R  Q  E  P  G
GTGTACTGCAACTCCTCAAGTGTTTTTTCCAGCTTACAATGGTACAGACAGGAGCCTGGG


   E  G  P  V  L  L  V  T  V  V  T  G  G  E  V  K  K  L  K  R
GAAGGTCCTGTCCTCCTGGTGACAGTAGTTACGGGTGGAGAAGTGAAGAAGCTGAAGAGA


   L  T  F  Q  F  G  D  A  R  K  D  S  S  L  H  I  T  A  A  Q
CTAACCTTTCAGTTTGGTGATGCAAGAAAGGACAGTTCTCTCCACATCACTGCGGCCCAG


   P  G  D  T  G  L  Y  L  C  A  G  A  G  S  Q  G  N  L  I  F
CCTGGTGATACAGGCCTCTACCTCTGTGCAGGAGCGGGAAGCCAAGGAAATCTCATCTTT


   G  K  G  T  K  L  S  V  K  P  N  I  Q  N  P  D  P  A  V  Y
GGAAAAGGCACTAAACTCTCTGTTAAACCAAATATCCAGAACCCTGACCCTGCCGTGTAC


   Q  L  R  D  S  K  S  S  D  K  S  V  C  L  F  T  D  F  D  S
CAGCTGAGAGACTCTAAATCCAGTGACAAGTCTGTCTGCCTATTCACCGATTTTGATTCT


   Q  T  N  V  S  Q  S  K  D  S  D  V  Y  I  T  D  K  T  V  L
CAAACAAATGTGTCACAAAGTAAGGATTCTGATGTGTATATCACAGACAAAACTGTGCTA


   D  M  R  S  M  D  F  K  S  N  S  A  V  A  W  S  N  K  S  D
GACATGAGGTCTATGGACTTCAAGAGCAACAGTGCTGTGGCCTGGAGCAACAAATCTGAC


   F  A  C  A  N  A  F  N  N  S  I  I  P  E  D  T  F  F  P  S
TTTGCATGTGCAAACGCCTTCAACAACAGCATTATTCCAGAAGACACCTTCTTCCCCAGC


   <TCR alfa linker c-jun>
   P  E  S  S  P  G  G  R  I  A  R  L  E  E  K  V  K  T  L  K
CCAGAAAGTTCCcccgggGGTAGAATCGCCCGGCTGGAGGAAAAAGTGAAAACCTTGAAA


   A  Q  N  S  E  L  A  S  T  A  N  M  L  R  E  Q  V  A  Q  L
GCTCAGAACTCGGAGCTGGCGTCCACGGCCAACATGCTCAGGGAACAGGTGGCACAGCTT


   K  Q  K  V  M  N  Y  *
AAACAGAAAGTCATGAACTACTAG
```

FIGURE 5

TCR beta>

```
M   V   D   G   G   I   T   Q   S   P   K   Y   L   F   R   K   E   G   Q   N
ATGGTGGATGGTGGAATCACTCAGTCCCCAAAGTACCTGTTCAGAAAGGAAGGACAGAAT

V   T   L   S   C   E   Q   N   L   N   H   D   A   M   Y   W   Y   R   Q   D
GTGACCCTGAGTTGTGAACAGAATTTGAACCACGATGCCATGTACTGGTACCGACAGGAC

P   G   Q   G   L   R   L   I   Y   Y   S   Q   I   V   N   D   F   Q   K   G
CCAGGGCAAGGGCTGAGATTGATCTACTACTCACAGATAGTAAATGACTTTCAGAAAGGA

D   I   A   E   G   Y   S   V   S   R   E   K   K   E   S   F   P   L   T   V
GATATAGCTGAAGGGTACAGCGTCTCTCGGGAGAAGAAGGAATCCTTTCCTCTCACTGTG

T   S   A   Q   K   N   P   T   A   F   Y   L   C   A   S   S   S   R   S   S
ACATCGGCCCAAAAGAACCCGACAGCTTTCTATCTCTGTGCCAGTAGTTCGAGGAGCTCC

Y   E   Q   Y   F   G   P   G   T   R   L   T   V   T   E   D   L   K   N   V
TACGAGCAGTACTTCGGGCCGGGCACCAGGCTCACGGTCACAGAGGACCTGAAAAACGTT

F   P   P   E   V   A   V   F   E   P   S   E   A   E   I   S   H   T   Q   K
TTCCCACCCGAGGTCGCTGTGTTTGAACCATCAGAAGCAGAGATCTCCCACACCCAAAAG

A   T   L   V   C   L   A   T   G   F   Y   P   D   H   V   E   L   S   W   W
GCCACACTGGTGTGCCTGGCCACAGGCTTCTACCCCGACCACGTGGAGCTGAGCTGGTGG

V   N   G   K   E   V   H   S   G   V   S   T   D   P   Q   P   L   K   E   Q
GTGAATGGGAAGGAGGTGCACAGTGGGGTCAGCACAGACCCGCAGCCCCTCAAGGAGCAG

P   A   L   N   D   S   R   Y   S̲   L   S   S   R   L   R   V   S   A   T   F
CCCGCCCTCAATGACTCCAGATACTC̲CCTGAGCAGCCGCCTGAGGGTCTCGGCCACCTTC

W   Q   N   P   R   N   H   F   R   C   Q   V   Q   F   Y   G   L   S   E   N
TGGCAGAACCCCCGCAACCACTTCCGCTGTCAAGTCCAGTTCTACGGGCTCTCGGAGAAT
```

```
 D   E   W   T   Q   D   R   A   K   P   V   T   Q   I   V   S   A   E   A   W
GACGAGTGGACCCAGGATAGGGCCAAACCTGTCACCCAGATCGTCAGCGCCGAGGCCTGG
<TCR beta linker c-fos>
 G   R   A   D   P   G   G   L   T   D   T   L   Q   A   E   T   D   Q   L   E
GGTAGAGCAGACcccgggGGTCTGACTGATACACTCCAAGCGGAGACAGATCAACTTGAA

 D   K   K   S   A   L   Q   T   E   I   A   N   L   L   K   E   K   E   K   L
GACAAGAAGTCTGCGTTGCAGACCGAGATTGCCAATCTACTGAAAGAGAAGGAAAAACTA

 E   F   I   L   A   A   Y   *
GAGTTCATCCTGGCAGCTTACTAG
```

FIGURE 6

```
TCR beta>
M   V   D   G   G   I   T   Q   S   P   K   Y   L   F   R   K   E   G   Q   N
ATGGTGGATGGTGGAATCACTCAGTCCCCAAAGTACCTGTTCAGAAAGGAAGGACAGAAT


V   T   L   S   C   E   Q   N   L   N   H   D   A   M   Y   W   Y   R   Q   D
GTGACCCTGAGTTGTGAACAGAATTTGAACCACGATGCCATGTACTGGTACCGACAGGAC


P   G   Q   G   L   R   L   I   Y   Y   S   Q   I · V   N   D   F   Q   K   G
CCAGGGCAAGGGCTGAGATTGATCTACTACTCACAGATAGTAAATGACTTTCAGAAAGGA


D   I   A   E   G   Y   S   V   S   R   E   K   K   E   S   F   P   L   T   V
GATATAGCTGAAGGGTACAGCGTCTCTCGGGAGAAGAAGGAATCCTTTCCTCTCACTGTG


T   S   A   Q   K   N   P   T   A   F   Y   L   C   A   S   S   R   S   S
ACATCGGCCCAAAAGAACCCGACAGCTTTCTATCTCTGTGCCAGTAGTTCGAGGAGCTCC


Y   E   Q   Y   F   G   P   G   T   R   L   T   V   T   E   D   L   K   N   V
TACGAGCAGTACTTCGGGCCGGGCACCAGGCTCACGGTCACAGAGGACCTGAAAAACGTT


F   P   P   E   V   A   V   F   E   P   S   E   A   E   I   S   H   T   Q   K
TTCCCACCCGAGGTCGCTGTGTTTGAACCATCAGAAGCAGAGATCTCCCACACCCAAAAG


A   T   L   V   C   L   A   T   G   F   Y   P   D   H   V   E   L   S   W   W
GCCACACTGGTGTGCCTGGCCACAGGCTTCTACCCCGACCACGTGGAGCTGAGCTGGTGG


V   N   G   K · E   V   H   S   G   V   S   T   D   P   Q   P   L   K   E   Q
GTGAATGGGAAGGAGGTGCACAGTGGGGTCAGCACAGACCCGCAGCCCCTCAAGGAGCAG


P   A   L   N   D   S   R   Y   S̲   L   S   S   R   L   R   V   S   A   T   F
CCCGCCCTCAATGACTCCAGATACTC̲CCTGAGCAGCCGCCTGAGGGTCTCGGCCACCTTC


W   Q   N   P   R   N   H   F   R   C   Q   V   Q   F   Y   G   L   S   E   N
TGGCAGAACCCCCGCAACCACTTCCGCTGTCAAGTCCAGTTCTACGGGCTCTCGGAGAAT
```

```
       D   E   W   T   Q   D   R   A   K   P   V   T   Q   I   V   S   A   E   A   W
    GACGAGTGGACCCAGGATAGGGCCAAACCTGTCACCCAGATCGTCAGCGCCGAGGCCTGG


    <TCR beta linker c-fos>
       G   R   A   D   P   G   G   L   T   D   T   L   Q   A   E   T   D   Q   L   E
    GGTAGAGCAGACcccgggGGTCTGACTGATACACTCCAAGCGGAGACAGATCAACTTGAA


       D   K   K   S   A   L   Q   T   E   I   A   N   L   L   K   E   K   E   K   L
    GACAAGAAGTCTGCGTTGCAGACCGAGATTGCCAATCTACTGAAAGAGAAGGAAAAACTA


                       linker Biotinylation tag>
       E   F   I   L   A   A   Y   G   S   G   G   G   L   N   D   I   F   E   A   Q
    GAGTTCATCCTGGCAGCTTACggatccGGTGGTGGTCTGAACGATATTTTTGAAGCTCAG


       K   I   E   W   H   *
    AAAATCGAATGGCATTAA
```
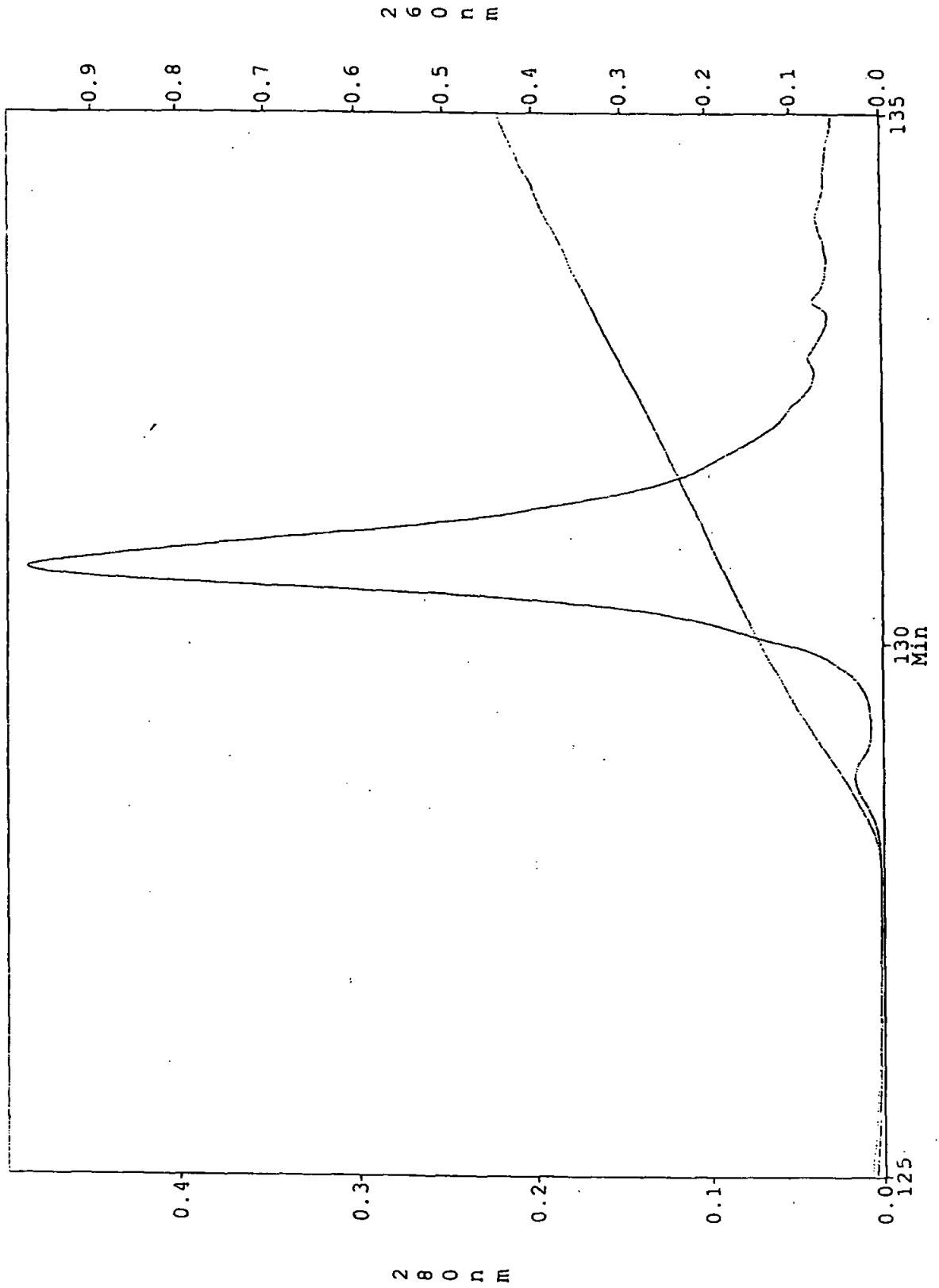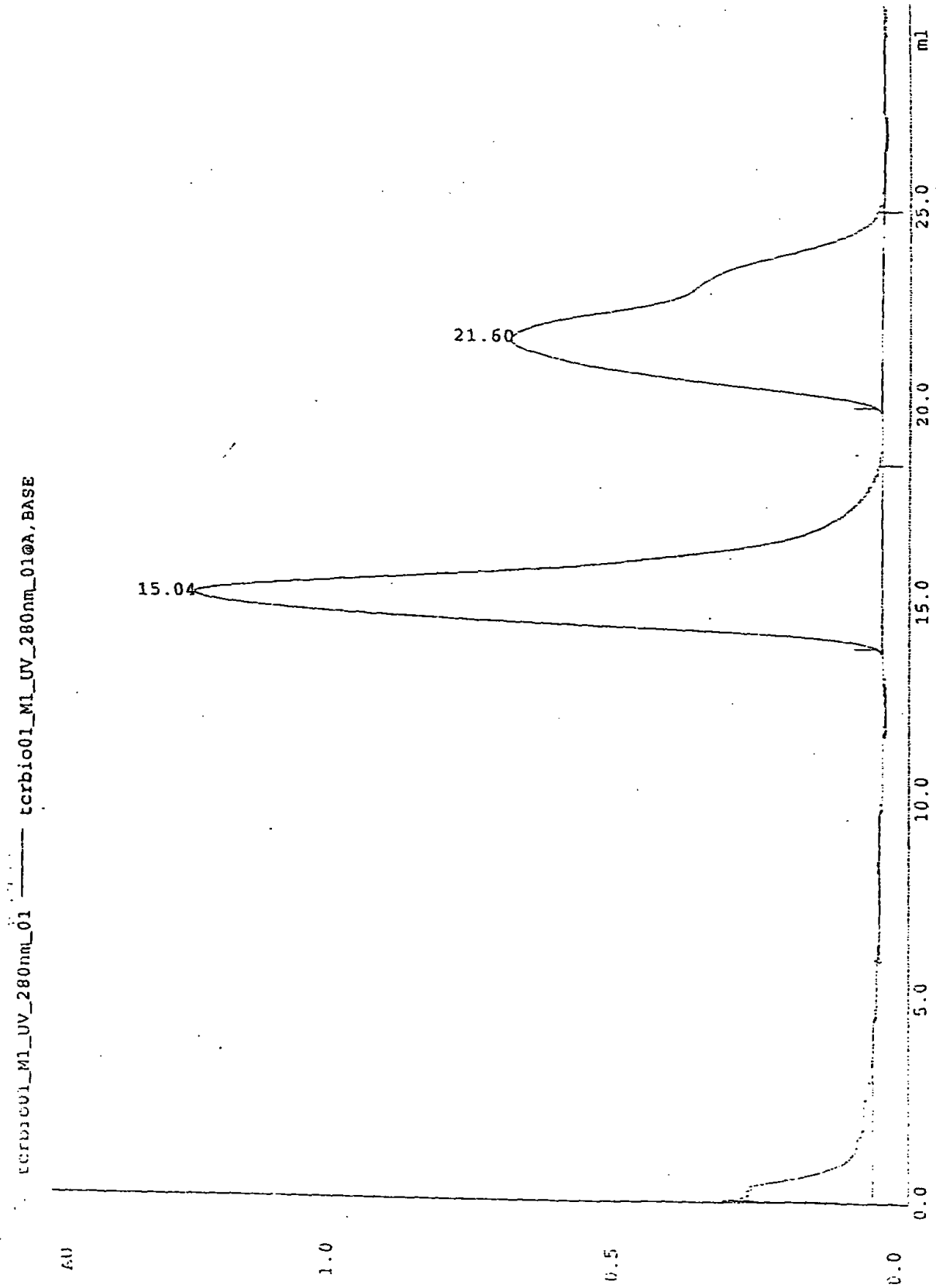
FIGURE 7

$V\alpha$

$V\beta$

TCR

$C\alpha$

$C\beta$

linker   G   G

G   G

jun L-zip

fos L-zip

G

G

Biotinylation
tag

Biotin

FIGURE 8

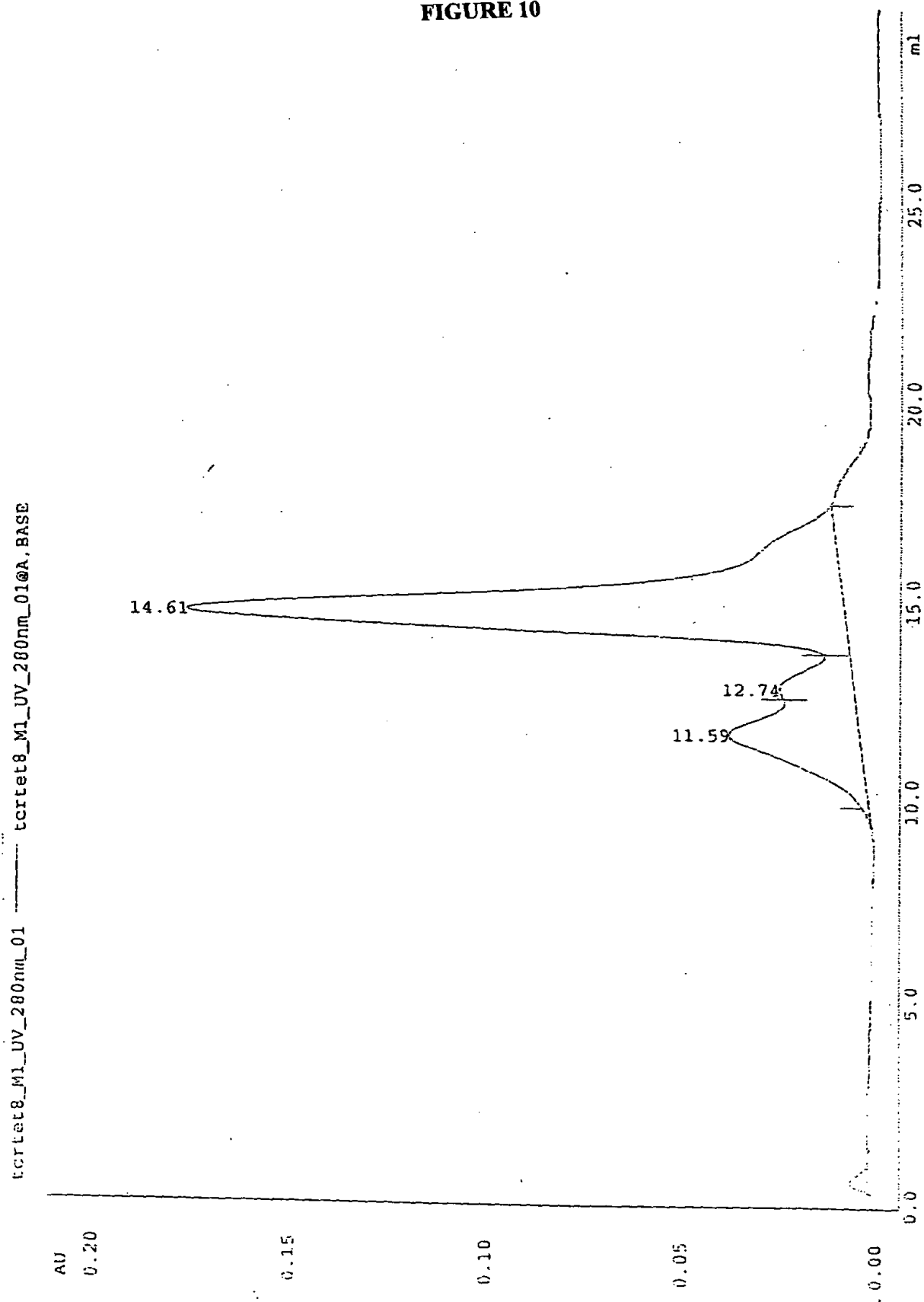Hqtcr04.bio -

FIGURE 9

FIGURE 10

FIGURE 11

```
    TCR alfa>
 M  Q  K  E  V  E  Q  N  S  G  P  L  S  V  P  E  G  A  I  A
atgCAGAAGGAAGTGGAGCAGAACTCTGGACCCCTCAGTGTTCCAGAGGGAGCCATTGCC


 S  L  N  C  T  Y  S  D  R  G  S  Q  S  F  F  W  Y  R  Q  Y
TCTCTCAACTGCACTTACAGTGACCGAGGTTCCCAGTCCTTCTTCTGGTACAGACAATAT


 S  G  K  S  P  E  L  I  M  S  I  Y  S  N  G  D  K  E  D  G
TCTGGGAAAGCCCTGAGTTGATAATGTCCATATACTCCAATGGTGACAAAGAAGATGGA


 R  F  T  A  Q  L  N  K  A  S  Q  Y  V  S  L  L  I  R  D  S
AGGTTTACAGCACAGCTCAATAAAGCCAGCCAGTATGTTTCTCTGCTCATCAGAGACTCC


 Q  P  S  D  S  A  T  Y  L  C  A  V  T  T  D  S  W  G  K  L
CAGCCCAGTGATTCAGCCACCTACCTCTGTGCCGTTACAACTGACAGCTGGGGGAAATTG


 Q  F  G  A  G  T  Q  V  V  V  T  P  D  I  Q  N  P  D  P  A
CAGTTTGGAGCAGGGACCCAGGTTGTGGTCACCCCAGATATCCAGAACCCTGACCCTGCC


 V  Y  Q  L  R  D  S  K  S  S  D  K  S  V  C  L  F  T  D  F
GTGTACCAGCTGAGAGACTCTAAATCCAGTGACAAGTCTGTCTGCCTATTCACCGATTTT


 D  S  Q  T  N  V  S  Q  S  K  D  S  D  V  Y  I  T  D  K  T
GATTCTCAAACAAATGTGTCACAAAGTAAGGATTCTGATGTGTATATCACAGACAAAACT


 V  L  D  M  R  S  M  D  F  K  S  N  S  A  V  A  W  S  N  K
GTGCTAGACATGAGGTCTATGGACTTCAAGAGCAACAGTGCTGTGGCCTGGAGCAACAAA


 S  D  F  A  C  A  N  A  F  N  N  S  I  I  P  E  D  T  F  F
TCTGACTTTGCATGTGCAAACGCCTTCAACAACAGCATTATTCCAGAAGACACCTTCTTC

        <TCR alfa linker c-jun>
 P  S  P  E  S  S  P  G  G  R  I  A  R  L  E  E  K  V  K  T
CCCAGCCCAGAAAGTTCCcccgggGGTAGAATCGCCCGGCTGGAGGAAAAAGTGAAAACC


 L  K  A  Q  N  S  E  L  A  S  T  A  N  M  L  R  E  Q  V  A
TTGAAAGCTCAGAACTCGGAGCTGGCGTCCACGGCCAACATGCTCAGGGAACAGGTGGCA


 Q  L  K  Q  K  V  M  N  Y  *
CAGCTTAAACAGAAAGTCATGAACTACTAG
```

FIGURE 12

```
  TCR beta>
  M   N   A   G   V   T   Q   T   P   K   F   Q   V   L   K   T   G   Q   S   M
atgAACGCTGGTGTCACTCAGACCCCAAAATTCCAGGTCCTGAAGACAGGACAGAGCATG


  T   L   Q   C   A   Q   D   M   N   H   E   Y   M   S   W   Y   R   Q   D   P
ACACTGCAGTGTGCCCAGGATATGAACCATGAATACATGTCCTGGTATCGACAAGACCCA


  G   M   G   L   R   L   I   H   Y   S   V   G   A   G   I   T   D   Q   G   E
GGCATGGGGCTGAGGCTGATTCATTACTCAGTTGGTGCTGGTATCACTGACCAAGGAGAA


  V   P   N   G   Y   N   V   S   R   S   T   T   E   D   F   P   L   R   L   L
GTCCCCAATGGCTACAATGTCTCCAGATCAACCACAGAGGATTTCCCGCTCAGGCTGCTG


  S   A   A   P   S   Q   T   S   V   Y   F   C   A   S   R   P   G   L   A   G
TCGGCTGCTCCCTCCCAGACATCTGTGTACTTCTGTGCCAGCAGGCCGGGACTAGCGGGA


  G   R   P   E   Q   Y   F   G   P   G   T   R   L   T   V   T   E   D   L   K
GGGCGACCAGAGCAGTACTTCGGGCCGGGCACCAGGCTCACGGTCACAGAGGACCTGAAA


  N   V   F   P   P   E   V   A   V   F   E   P   S   E   A   E   I   S   H   T
AACGTGTTCCCACCCGAGGTCGCTGTGTTTGAGCCATCAGAAGCAGAGATCTCCCACACC


  Q   K   A   T   L   V   C   L   A   T   G   F   Y   P   D   H   V   E   L   S
CAAAAGGCCACACTGGTGTGCCTGGCCACAGGCTTCTACCCCGACCACGTGGAGCTGAGC


  W   W   V   N   G   K   E   V   H   S   G   V   S   T   D   P   Q   P   L   K
TGGTGGGTGAATGGGAAGGAGGTGCACAGTGGGGTCAGCACAGACCCGCAGCCCCTCAAG


  E   Q   P   A   L   N   D   S   R   Y   A̲   L   S   S   R   L   R   V   S   A
GAGCAGCCCGCCCTCAATGACTCCAGATACg̲c̲tCTGAGCAGCCGCCTGAGGGTCTCGGCC


  T   F   W   Q   N   P   R   N   H   F   R   C   Q   V   Q   F   Y   G   L   S
ACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGTCAAGTCCAGTTCTACGGGCTCTCG


  E   N   D   E   W   T   Q   D   R   A   K   P   V   T   Q   I   V   S   A   E
GAGAATGACGAGTGGACCCAGGATAGGGCCAAACCTGTCACCCAGATCGTCAGCGCCGAG


       <TCR beta linker c-fos>
  A   W   G   R   A   D   P   G   G   L   T   D   T   L   Q   A   E   T   D   Q
GCCTGGGGTAGAGCAGACcccgggGGTCTGACTGATACACTCCAAGCGGAGACAGATCAA
```

```
      L   E   D   K   K   S   A   L   Q   T   E   I   A   N   L   L   K   E   K   E
CTTGAAGACAAGAAGTCTGCGTTGCAGACCGAGATTGCCAATCTACTGAAAGAGAAGGAA

                                      linker  Biotinylation tag>
    K   L   E   F   I   L   A   A   Y   G   S   G   G   G   L   N   D   I   F   E
AAACTAGAGTTCATCCTGGCAGCTTACggatccGGTGGTGGTCTGAACGATATTTTTGAA


    A   Q   K   I   E   W   H   *
GCTCAGAAAATCGAATGGCATTAAGCTT
```

FIGURE 13

```
   TCR alfa>
M   Q   Q   K   N   D   D   Q   Q   V   K   Q   N   S   P   S   L   S   V   Q
atgCAACAGAAGAATGATGACCAGCAAGTTAAGCAAAATTCACCATCCCTGAGCGTCCAG


E   G   R   I   S   I   L   N   C   D   Y   T   N   S   M   F   D   Y   F   L
GAAGGAAGAATTTCTATTCTGAACTGTGACTATACTAACAGCATGTTTGATTATTTCCTA


W   Y   K   K   Y   P   A   E   G   P   T   F   L   I   S   I   S   S   I   K
TGGTACAAAAAATACCCTGCTGAAGGTCCTACATTCCTGATATCTATAAGTTCCATTAAG


D   K   N   E   D   G   R   F   T   V   F   L   N   K   S   A   K   H   L   S
GATAAAAATGAAGATGGAAGATTCACTGTCTTCTTAAACAAAAGTGCCAAGCACCTCTCT .


L   H   I   V   P   S   Q   P   G   D   S   A   V   Y   F   C   A   A   M   E
CTGCACATTGTGCCCTCCCAGCCTGGAGACTCTGCAGTGTACTTCTGTGCAGCAATGGAG


G   A   Q   K   L   V   F   G   Q   G   T   R   L   T   I   N   P   N   I   Q
GGAGCCCAGAAGCTGGTATTTGGCCAAGGAACCAGGCTGACTATCAACCCAAATATCCAG


N   P   D   P   A   V   Y   Q   L   R   D   S   K   S   S   D   K   S   V   C
AACCCTGACCCTGCCGTGTACCAGCTGAGAGACTCTAAATCCAGTGACAAGTCTGTCTGC


L   F   T   D   F   D   S   Q   T   N   V   S   Q   S   K   D   S   D   V   Y
CTATTCACCGATTTTGATTCTCAAACAAATGTGTCACAAAGTAAGGATTCTGATGTGTAT


I   T   D   K   T   V   L   D   M   R   S   M   D   F   K   S   N   S   A   V
ATCACAGACAAAACTGTGCTAGACATGAGGTCTATGGACTTCAAGAGCAACAGTGCTGTG


A   W   S   N   K   S   D   F   A   C   A   N   A   F   N   N   S   I   I   P
GCCTGGAGCAACAAATCTGACTTTGCATGTGCAAACGCCTTCAACAACAGCATTATTCCA

                     <TCR alfa linker c-jun>
E   D   T   F   F   P   S   P   E   S   S   P   G   G   R   I   A   R   L   E
GAAGACACCTTCTTCCCCAGCCCAGAAAGTTCCcccgggGGTAGAATCGCCCGGCTGGAG


E   K   V   K   T   L   K   A   Q   N   S   E   L   A   S   T   A   N   M   L
GAAAAAGTGAAAACCTTGAAAGCTCAGAACTCGGAGCTGGCGTCCACGGCCAACATGCTC


R   E   Q   V   A   Q   L   K   Q   K   V   M   N   Y   *
AGGGAACAGGTGGCACAGCTTAAACAGAAAGTCATGAACTACTAG
```

FIGURE 14

```
   TCR beta>
M   N   A   G   V   T   Q   T   P   K   F   Q   V   L   K   T   G   Q   S   M
atgAACGCTGGTGTCACTCAGACCCCAAAATTCCAGGTCCTGAAGACAGGACAGAGCATG


T   L   Q   C   A   Q   D   M   N   H   E   Y   M   S   W   Y   R   Q   D   P
ACACTGCAGTGTGCCCAGGATATGAACCATGAATACATGTCCTGGTATCGACAAGACCCA


G   M   G   L   R   L   I   H   Y   S   V   G   A   G   I   T   D   Q   G   E
GGCATGGGGCTGAGGCTGATTCATTACTCAGTTGGTGCTGGTATCACTGACCAAGGAGAA


V   P   N   G   Y   N   V   S   R   S   T   T   E   D   F   P   L   R   L   L
GTCCCCAATGGCTACAATGTCTCCAGATCAACCACAGAGGATTTCCCGCTCAGGCTGCTG


S   A   A   P   S   Q   T   S   V   Y   F   C   A   S   S   Y   P   G   G   G
TCGGCTGCTCCCTCCCAGACATCTGTGTACTTCTGTGCCAGCAGTTACCaGGaGGGGGGG


F   Y   E   Q   Y   F   G   P   G   T   R   L   T   V   T   E   D   L   K   N
TTTTACGAGCAGTACTTCGGGCCGGGCACCAGGCTCACGGTCACAGAGGACCTGAAAAAC


V   F   P   P   E   V   A   V   F   E   P   S   E   A   E   I   S   H   T   Q
GTGTTCCCACCCGAGGTCGCTGTGTTTGAGCCATCAGAAGCAGAGATCTCCCACACCCAA


K   A   T   L   V   C   L   A   T   G   F   Y   P   D   H   V   E   L   S   W
AAGGCCACACTGGTGTGCCTGGCCACAGGCTTCTACCCCGACCACGTGGAGCTGAGCTGG


W   V   N   G   K   E   V   H   S   G   V   S   T   D   P   Q   P   L   K   E
TGGGTGAATGGGAAGGAGGTGCACAGTGGGGTCAGCACAGACCCGCAGCCCCTCAAGGAG


Q   P   A   L   N   D   S   R   Y   A   L   S   S   R   L   R   V   S   A   T
CAGCCCGCCCTCAATGACTCCAGATACgctCTGAGCAGCCGCCTGAGGGTCTCGGCCACC


F   W   Q   D   P   R   N   H   F   R   C   Q   V   Q   F   Y   G   L   S   E
TTCTGGCAGgACCCCCGCAACCACTTCCGCTGTCAAGTCCAGTTCTACGGGCTCTCGGAG


N   D   E   W   T   Q   D   R   A   K   P   V   T   Q   I   V   S   A   E   A
AATGACGAGTGGACCCAGGATAGGGCCAAACCCGTCACCCAGATCGTCAGCGCCGAGGCC


   <TCR beta linker c-fos>
W   G   R   A   D   P   G   G   L   T   D   T   L   Q   A   E   T   D   Q   L
TGGGGTAGAGCAGACcccgggGGTCTGACTGATACACTCCAAGCGGAGACAGATCAACTT
```

```
      E   D   K   K   S   A   L   Q   T   E   I   A   N   L   L   K   E   K   E   K
     GAAGACAAGAAGTCTGCGTTGCAGACCGAGATTGCCAATCTACTGAAAGAGAAGGAAAAA
```

```
                                  linker Biotinylation tag>
      L   E   F   I   L   A   A   Y   G   S   G   G   G   L   N   D   I   F   E   A
     CTAGAGTTCATCCTGGCAGCTTACggatccGGTGGTGGTCTGAACGATATTTTTGAAGCT
```

```
      Q   K   I   E   W   H   *
     CAGAAAATCGAATGGCATTAAGCTT
```

FIGURE 15

A

Poly-C 'anchor primer' :

```
            Xho I
5'- TAA ATA CTC GAG GCG CGC CCC CCC CCC CCC CCC -3'
```

B

TCR α chain constant region specific primer:

```
            Xma I
5'- ATA TAA CCC GGG GAA CCA GAT CCC CAC AGG AAC TTT CTG GGC TGG GGA -3'
```

C

TCR β chain constant region specific primer:

```
            Xma I
5'- ATA TAA CCC GGG GAA CCA GAT CCC CAC AGT CTG CTC TAC CCC AGG CC -3'
```

FIGURE 16

A

c-jun 5' primer:

Xma I

5'- CATACACCCGGGGGTAGAATCGCCCGGCTGGAG -3'

B

c-jun 3' primer:

Xho I

5' - GTGTGTGCTCGAGGATCCTAGTAGTTCATGACTTTCTGTTTAAGCTGTGC -3'

Bam HI

C

c-fos 5' primer:

Xma I

5' -CATACACCCGGGGGTCTGACTGATACACTCCAAGCGGAG -3'

D

c-fos 3' primer:

Xho I

5'- TGTGTGCTCGAGGATCCTAGTAAGCTGCCAGGATGAACTCTAGTTTTTC -3'

Bam HI

FIGURE 17

A

5'- AGA ATC GCC CGG CTG GAG GAA AAA GTG AAA ACC TTG AAA GCT CAG AAC TCG GAG CTG GCG
    R   I   A   R   L   E   E   K   V   K   T   L   K   A   Q   N   S   E   L   A

TCC ACG GCC AAC ATG CTC AGG GAA CAG GTG GCA CAG CTT AAA CAG AAA GTC ATG AAC TAC -3'
S   T   A   N   M   L   R   E   Q   V   A   Q   L   K   Q   K   V   M   N   Y

C-jun leucine zipper DNA and amino acid (one-letter code) sequences as fused to TCR alfa chains.

_____

B

5'- CTG ACT GAT ACA CTC CAA GCG GAG ACA GAC CAA CTA GAA GAT GAG AAG TCT GCT TTG CAG
    L   T   D   T   L   Q   A   E   T   D   Q   L   E   D   E   K   S   A   L   Q

·TT GCC AAC CTG CTG AAG GAG AAA GAA AAA CTA GAG TTC ATC CTG GCA GCT TAC -3'
I   A   N   L   L   K   E   K   E   K   L   E   F   I   L   A   A   Y

DNA and amino acid (one-letter code) sequences as fused to TCR beta chains.

FIGURE 18

A
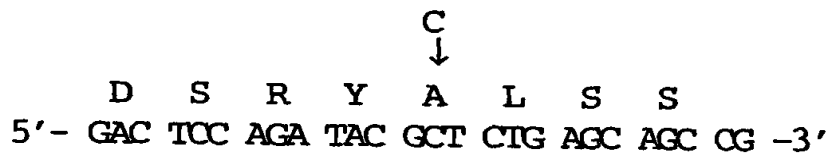
Mutation of cysteine to serine, forwards (sense) primer, indicating amino acid sequence and the mutation:

```
                          C
                          ↓
      D     S     R     Y     S     L     S     S
5'- GAC TCC AGA TAC AGC CTG AGC AGC CG -3'
```
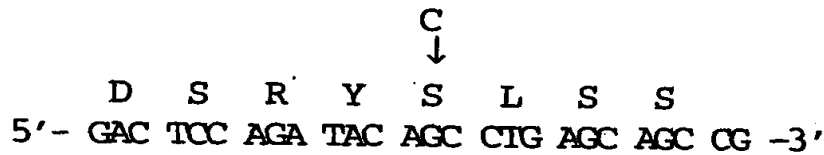
B

Mutation of cysteine to serine, backwards (nonsense) primer:

```
5'- CG GCT GCT CAG GCT GTA TCT GGA GTC -3'
```

C

Mutation of cysteine to alanine, forwards (sense) primer, indicating amino acid sequence and the mutation:

```
                          C
                          ↓
      D     S     R     Y     A     L     S     S
5'- GAC TCC AGA TAC GCT CTG AGC AGC CG -3'
```

D

Mutation of cysteine to alanine, backwards (nonsense) primer:

```
5'- CG GCT GCT CAG AGC GTA TCT GGA GTC -3'
```
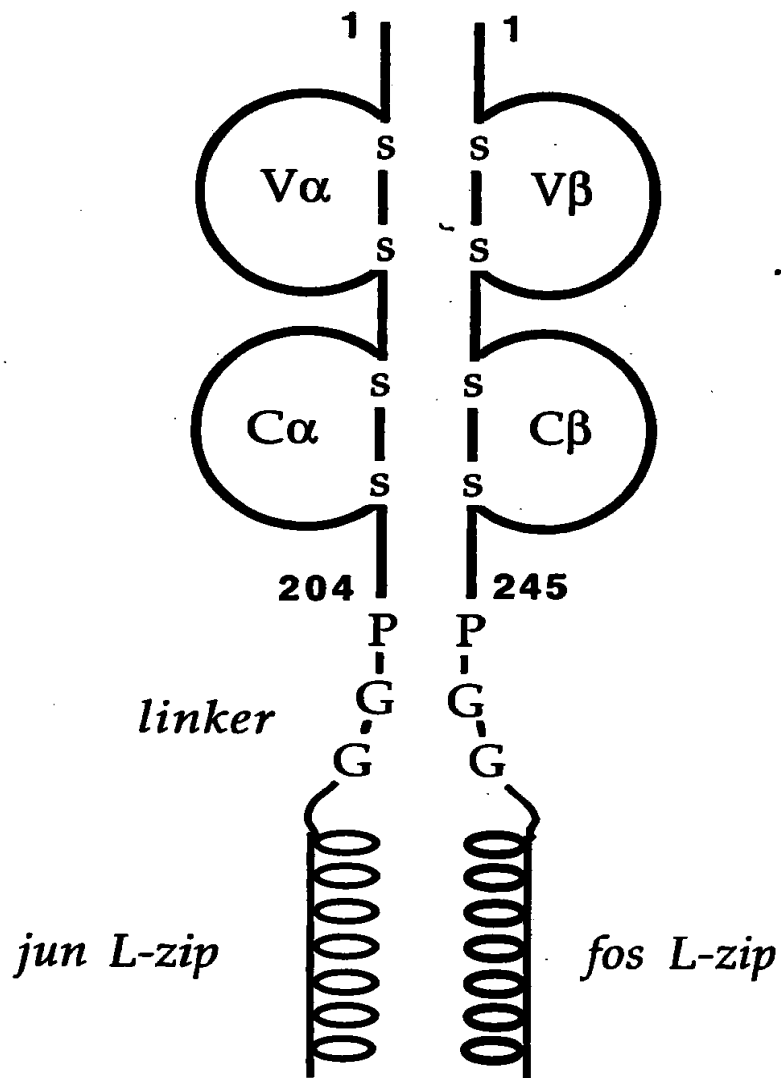
FIGURE 19

FIGURE 20

A

5′ PCR primer for the human Vα10.2 chain of the JM22 Influenza Matrix peptide-HLA-A0201 restricted TCR:

```
              M    Q    L    L    E    Q    S    P    Q    F    L
5′- gctctagacat ATG  CAa  CTa  CTa  GAa  CAa  AGt  CCT  CAG  TTT  CTA
            Nde I
```

```
 S    I    Q    E
AGC  ATC  CAA  GAG  G  -3′
```

B

5′ PCR primer for the human Vβ17 chain of the JM22 Influenza Matrix peptide-HLA-A0201 restricted TCR:

```
              M    V    D    G    G    I    T    Q    S
5′- gctctagacat ATG  GTG  GAT  GGT  GGA  ATC  ACT  CAG  TCC  C  -3′
            Nde I
```

C

5′ PCR primer for the mouse Vα4 chain of the Influenza nucleoprotein peptide-H2-Dᵇ restricted TCR:

```
              M    D    S    V    T    Q    M    Q    G    Q    V
5′- gctctagacat ATG  GAt  TCt  GTt  ACt  CAa  ATG  CAa  GGt  CAa  GTG
            Nde I
```

```
 T    L    S    S
ACC  CTC  TCA  TCA  G  -3′
```

FIGURE 20 (continued)

D

5' PCR primer for the mouse Vβ11 chain of the Influenza nucleoprotein peptide-H2-D^b restricted TCR:

```
              M    E    P    T    N    A    G    V    I    Q
5'- gctctagacat ATG  GAa  CCa  ACa  AAt  GCt  GGt  GTt  ATC  CAA

 T    P    R    H
ACA  CCT  AGG  CAC  -3'
```

E

5' PCR primer for the human Vα23 chain of the 003 HIV-1 Gag peptide-HLA-A0201 restricted TCR:

```
             M    K    Q    E    V    T    Q    I
5'- ggaattccat atg  AAA  CAa  GAG  GTt  ACa  CAa  ATT  CC  -3'
             Nde I
```

F

5' PCR primer for the human Vβ5.1 chain of the 003 HIV-1 Gag peptide-HLA-A0201 restricted TCR:

```
             M    K    A    G    V    T    Q    T
5'- ggaattccat atg  AAa  GCT  GGA  GTt  ACT  CAA  ACT  CC  -3'
```

FIGURE 20 (c ntinued)

G

5' PCR primer for the human Vα2.3 chain of the HTLV-1 Tax peptide-HLA-A0201 restricted A6 TCR:

```
            M   Q   K   E   V   E   Q   K
5' -cccccc cat ATG CAG AAG GAA GTG GAG CAG AAC -3'
           Nde I
```

H

5' PCR primer for the human Vβ12.3 chain of the HTLV-1 Tax peptide-HLA-A0201 restricted A6 TCR:

```
            M   K   A   G   V   T   Q   T
5'- cccccc cat ATG AAC GCT GGT GTC ACT CAG ACC -3'
           Nde I
```

I

5' PCR primer for the human Vα17.2 chain of the HTLV-1 Tax peptide-HLA-A0201 restricted B7 TCR:

```
            M   Q   Q   K   N   D   D   Q   Q   V
5' -cccccc cat ATG CAA CAa AAa AAT GAT GAC CAG CAA GTT
           Nde I
```

```
K   Q   N
AAG CAA AAT -3'
```

FIGURE 20 (continued)

J

5' PCR primer for the human Vβ12.3 chain of the HTLV-1 Tax peptide-HLA-A0201 restricted B7 TCR:

```
                      M   N   A   G   V   T   Q   T   P   K   F
5' -cccccc cat ATG AAC GCT GGT GTC ACT CAG ACC CCA AAA TTC
           Nde I
```

Q
CAG -3'

K

3' PCR primer for human Cα chains, generally applicable:

```
5'- cataca ccc ggg GGA ACT TTC TGG GCT GGG GAA GAA GG -3'
           Xma I
```

L

3' PCR primer for human Cβ chains, generally applicable:

```
5'- cataca ccc ggg GTC TGC TCT ACC CCA GGC CTC -3'
           Xma I
```

FIGURE 21

TCR alfa>

M   Q   L   L   E   Q   S   P   Q   F   L   S   I   Q   E   G   E   N   L   T
ATGCAaCTaCTaGAaCAaAGtCCTCAGTTTCTAAGCATCCAAGAGGGAGAAAATCTCACT

V   Y   C   N   S   S   S   V   F   S   S   L   Q   W   Y   R   Q   E   P   G
GTGTACTGCAACTCCTCAAGTGTTTTTTCCAGCTTACAATGGTACAGACAGGAGCCTGGG

E   G   P   V   L   L   V   T   V   V   T   G   G   E   V   K   K   L   K   R
GAAGGTCCTGTCCTCCTGGTGACAGTAGTTACGGGTGGAGAAGTGAAGAAGCTGAAGAGA

L   T   F   Q   F   G   D   A   R   K   D   S   S   L   H   I   T   A   A   Q
CTAACCTTTCAGTTTGGTGATGCAAGAAAGGACAGTTCTCTCCACATCACTGCGGCCCAG

P   G   D   T   G   L   Y   L   C   A   G   A   G   S   Q   G   N   L   I   F
CCTGGTGATACAGGCCTCTACCTCTGTGCAGGAGCGGGAAGCCAAGGAAATCTCATCTTT

G   K   G   T   K   L   S   V   K   P   N   I   Q   N   P   D   P   A   V   Y
GGAAAAGGCACTAAACTCTCTGTTAAACCAAATATCCAGAACCCTGACCCTGCCGTGTAC

Q   L   R   D   S   K   S   S   D   K   S   V   C   L   F   T   D   F   D   S
CAGCTGAGAGACTCTAAATCCAGTGACAAGTCTGTCTGCCTATTCACCGATTTTGATTCT

Q   T   N   V   S   Q   S   K   D   S   D   V   Y   I   T   D   K   T   V   L
CAAACAAATGTGTCACAAAGTAAGGATTCTGATGTGTATATCACAGACAAAACTGTGCTA

D   M   R   S   M   D   F   K   S   N   S   A   V   A   W   S   N   K   S   D
GACATGAGGTCTATGGACTTCAAGAGCAACAGTGCTGTGGCCTGGAGCAACAAATCTGAC

F   A   C   A   N   A   F   N   N   S   I   I   P   E   D   T   F   F   P   S
TTTGCATGTGCAAACGCCTTCAACAACAGCATTATTCCAGAAGACACCTTCTTCCCCAGC

<TCR alfa linker c-jun>

P   E   S   S   P   G   G   R   I   A   R   L   E   E   K   V   K   T   L   K
CCAGAAAGTTCCcccgggGGTAGAATCGCCCGGCTGGAGGAAAAAGTGAAAACCTTGAAA

A   Q   N   S   E   L   A   S   T   A   N   M   L   R   E   Q   V   A   Q   L
GCTCAGAACTCGGAGCTGGCGTCCACGGCCAACATGCTCAGGGAACAGGTGGCACAGCTT

K   Q   K   V   M   N   Y   *
AAACAGAAAGTCATGAACTACTAG

FIGURE 22

TCR beta>
```
M   V   D   G   G   I   T   Q   S   P   K   Y   L   F   R   K   E   G   Q   N
ATGGTGGATGGTGGAATCACTCAGTCCCCAAAAGTACCTGTTCAGAAAGGAAGGACAGAAT

V   T   L   S   C   E   Q   N   L   N   H   D   A   M   Y   W   Y   R   Q   D
GTGACCCTGAGTTGTGAACAGAATTTGAACCACGATGCCATGTACTGGTACCGACAGGAC

P   G   Q   G   L   R   L   I   Y   Y   S   Q   I   V   N   D   F   Q   K   G
CCAGGGCAAGGGCTGAGATTGATCTACTACTCACAGATAGTAAATGACTTTCAGAAAGGA

D   I   A   E   G   Y   S   V   S   R   E   K   K   E   S   F   P   L   T   V
GATATAGCTGAAGGGTACAGCGTCTCTCGGGAGAAGAAGGAATCCTTTCCTCTCACTGTG

T   S   A   Q   K   N   P   T   A   F   Y   L   C   A   S   S   S   R   S   Sq
ACATCGGCCCAAAAGAACCCGACAGCTTTCTATCTCTGTGCCAGTAGTTCGAGGAGCTCC

Y   E   Q   Y   F   G   P   G   T   R   L   T   V   T   E   D   L   K   N   V
TACGAGCAGTACTTCGGGCCGGGCACCAGGCTCACGGTCACAGAGGACCTGAAAAACGTT

F   P   P   E   V   A   V   F   E   P   S   E   A   E   I   S   H   T   Q   K
TTCCCACCCGAGGTCGCTGTGTTTGAACCATCAGAAGCAGAGATCTCCCACACCCAAAAG

A   T   L   V   C   L   A   T   G   F   Y   P   D   H   V   E   L   S   W   W
GCCACACTGGTGTGCCTGGCCACAGGCTTCTACCCCGACCACGTGGAGCTGAGCTGGTGG

V   N   G   K   E   V   H   S   G   V   S   T   D   P   Q   P   L   K   E   Q
GTGAATGGGAAGGAGGTGCACAGTGGGGTCAGCACAGACCCGCAGCCCCTCAAGGAGCAG

P   A   L   N   D   S   R   Y   C   L   S   S   R   L   R   V   S   A   T   F
CCCGCCCTCAATGACTCCAGATACTGCCTGAGCAGCCGCCTGAGGGTCTCGGCCACCTTC

W   Q   N   P   R   N   H   F   R   C   Q   V   Q   F   Y   G   L   S   E   N
TGGCAGAACCCCCGCAACCACTTCCGCTGTCAAGTCCAGTTCTACGGGCTCTCGGAGAAT

D   E   W   T   Q   D   R   A   K   P   V   T   Q   I   V   S   A   E   A   W
GACGAGTGGACCCAGGATAGGGCCAAACCTGTCACCCAGATCGTCAGCGCCGAGGCCTGG
```

<TCR beta linker c-fos>
```
G   R   A   D   P   G   G   L   T   D   T   L   Q   A   E   T   D   Q   L   E
GGTAGAGCAGACcccgggGGTCTGACTGATACACTCCAAGCGGAGACAGATCAACTTGAA

D   K   K   S   A   L   Q   T   E   I   A   N   L   L   K   E   K   E   K   L
GACAAGAAGTCTGCGTTGCAGACCGAGATTGCCAATCTACTGAAAGAGAAGGAAAAACTA

E   F   I   L   A   A   Y   *
GAGTTCATCCTGGCAGCTTACTAG
```

FIGURE 23

TCR alfa>
```
M   N   Y   S   P   A   L   V   T   V   M   L   F   V   F   G   R   T   H   G
ATGAACTATTCTCCAGCTTTAGTGACTGTGATGCTGTTTGTGTTTGGGAGGACCCATGGA

D   S   V   T   Q   M   Q   G   Q   V   T   L   S   E   D   D   F   L   F   I
GACTCAGTAACCCAGATGCAAGGTCAAGTGACCCTCTCAGAAGACGACTTCCTATTTATA

N   C   T   Y   S   T   T   W   Y   P   T   L   F   W   Y   V   Q   Y   P   G
AACTGTACTTATTCAACCACATGGTACCCGACTCTTTTCTGGTATGTCCAATATCCTGGA

E   G   P   Q   L   L   L   K   V   T   T   A   N   N   K   G   I   S   R   G
GAAGGTCCACAGCTCCTTTTGAAAGTCACAACAGCCAACAACAAGGGAATCAGCAGAGGT

F   E   A   T   Y   D   K   G   T   T   S   F   H   L   Q   K   A   S   V   Q
TTTGAAGCTACATATGATAAAGGAACAACGTCCTTCCACTTGCAGAAAGCCTCAGTGCAG

E   S   D   S   A   V   Y   Y   C   V   L   G   D   R   Q   G   G   R   A   L
GAGTCAGACTCTGCTGTGTACTACTGTGTGCTGGGTGATCGACAGGGAGGCAGAGCTCTG

I   F   G   T   G   T   T   V   S   V   S   P   N   I   Q   N   P   E   P   A
ATATTTGGAACAGGAACCACGGTATCAGTCAGCCCCAACATCCAGAACCCAGAACCTGCT

V   Y   Q   L   K   D   P   R   S   Q   D   S   T   L   C   L   F   T   D   F
GTGTACCAGTTAAAAGATCCTCGGTCTCAGGACAGCACCCTCTGCCTGTTCACCGACTTT

D   S   Q   I   N   V   P   K   T   M   E   S   G   T   F   I   T   D   K   T
GACTCCCAAATCAATGTGCCGAAAACCATGGAATCTGGAACGTTCATCACTGACAAAACT

V   L   D   M   K   A   M   D   S   K   S   N   G   A   I   A   W   S   N   Q
GTGCTGGACATGAAAGCTATGGATTCCAAGAGCAATGGGGCCATTGCCTGGAGCAACCAG

T   S   F   T   C   Q   D   I   S   K   E   T   N   A   T   Y   P   S   S   D
ACAAGCTTCACCTGCCAAGATATCTCCAAAGAGACCAACGCCACCTACCCCAGTTCAGAC
```

<TCR alfa linker c-jun>
```
V   P   G   G   R   I   A   R   L   E   E   K   V   K   T   L   K   A   Q   N
GTTcccgggGGTAGAATCGCCCGGCTGGAGGAAAAAGTGAAAACCTTGAAAGCTCAGAAC

S   E   L   A   S   T   A   N   M   L   R   E   Q   V   A   Q   L   K   Q   K
TCGGAGCTGGCGTCCACGGCCAACATGCTCAGGGAACAGGTGGCACAGCTTAAACAGAAA

V   M   N   Y   *
GTCATGAACTACTAG
```

FIGURE 24

TCR beta>
```
 M   K   A   G   V   T   Q   T   P   R   Y   L   I   K   T   R   G   Q   Q   V
ATGAAAGCTGGAGTTACTCAAACTCCAAGATATCTGATCAAAACGAGAGGACAGCAAGTG

 T   L   S   C   S   P   I   S   G   H   R   S   V   S   W   Y   Q   Q   T   P
ACACTGAGCTGCTCCCCTATCTCTGGGCATAGGAGTGTATCCTGGTACCAACAGACCCCA

 G   Q   G   L   Q   F   L   F   E   Y   F   S   E   T   Q   R   N   K   G   N
GGACAGGGCCTTCAGTTCCTCTTTGAATACTTCAGTGAGACACAGAGAAACAAAGGAAAC

 F   P   G   R   F   S   G   R   Q   F   S   N   S   R   S   E   M   N   V   S
TTCCCTGGTCGATTCTCAGGGCGCCAGTTCTCTAACTCTCGCTCTGAGATGAATGTGAGC

 T   L   E   L   G   D   S   A   L   Y   L   C   A   S   S   F   D   S   G   N
ACCTTGGAGCTGGGGGACTCGGCCCTTTATCTTTGCGCCAGCAGCTTCGACAGCGGGAAT

 S   P   L   H   F   G   N   G   T   R   L   T   V   T   E   D   L   N   K   V
TCACCCCTCCACTTTGGGAACGGGACCAGGCTCACTGTGACAGAGGACCTGAACAAGGTG

 F   P   P   E   V   A   V   F   E   P   S   E   A   E   I   S   H   T   Q   K
TTCCCACCCGAGGTCGCTGTGTTTGAGCCATCAGAAGCAGAGATCTCCCACACCCAAAAG

 A   T   L   V   C   L   A   T   G   F   F   P   D   H   V   E   L   S   W   W
GCCACACTGGTGTGCCTGGCCACAGGCTTCTTCCCTGACCACGTGGAGCTGAGCTGGTGG

 V   N   G   K   E   V   H   S   G   V   S   Q   D   P   Q   P   L   K   E   Q
GTGAATGGGAAGGAGGTGCACAGTGGGGTCAGCCAGGACCCGCAGCCCCTCAAGGAGCAG

 P   A   L   N   D   S   R   Y   S   L   S   S   R   L   R   V   S   A   T   F
CCCGCCCTCAATGACTCCAGATACAGCCTGAGCAGCCGCCTGAGGGTCTCGGCCACCTTC

 W   Q   N   P   R   N   H   F   R   C   Q   V   Q   F   Y   G   L   S   E   N
TGGCAGAACCCCCGCAACCACTTCCGCTGTCAAGTCCAGTTCTACGGGCTCTCGGAGAAT

 D   E   W   T   Q   D   R   A   K   P   V   T   Q   I   V   S   A   E   A   W
GACGAGTGGACCCAGGATAGGGCCAAACCTGTCACCCAGATCGTCAGCGCCGAGGCCTGG
```

<TCR beta linker c-fos>
```
 G   R   A   D   P   G   G   L   T   D   T   L   Q   A   E   T   D   Q   L   E
GGTAGAGCAGACCCCGGGGGTCTGACTGATACACTCCAAGCGGAGACAGATCAACTTGAA

 D   K   K   S   A   L   Q   T   E   I   A   N   L   L   K   E   K   E   K   L
GACAAGAAGTCTGCGTTGCAGACCGAGATTGCCAATCTACTGAAAGAGAAGGAAAAACTA

 E   F   I   L   A   A   Y   *
GAGTTCATCCTGGCAGCTTACTAG
```

FIGURE 25

TCR alfa>

```
 M   K   Q   E   V   T   Q   I   P   A   A   L   S   V   P   E   G   E   N   L
ATGAAACAAGAAGTTACACAGATTCCTGCAGCTCTGAGTGTCCCAGAAGGAGAAAACTTG


 V   L   N   C   S   F   T   D   S   A   I   Y   N   L   Q   W   F   R   Q   D
GTTCTCAACTGCAGTTTCACTGATAGCGCTATTTACAACCTCCAGTGGTTTAGGCAGGAC


 P   G   K   G   L   T   S   L   L   L   I   Q   S   S   Q   R   E   Q   T   S
CCTGGGAAAGGTCTCACATCTCTGTTGCTTATTCAGTCAAGTCAGAGAGAGCAAACAAGT


 G   R   L   N   A   S   L   D   K   S   S   G   R   S   T   L   Y   I   A   A
GGAAGACTTAATGCCTCGCTGGATAAATCATCAGGACGTAGTACTTTATACATTGCAGCT


 S   Q   P   G   D   S   A   T   Y   L   C   A   V   T   N   F   N   K   F   Y
TCTCAGCCTGGTGACTCAGCCACCTACCTCTGTGCTGTGACCAACTTCAACAAATTTTAC


 F   G   S   G   T   K   L   N   V   K   P   N   I   Q   N   P   D   P   A   V
TTTGGATCTGGGACCAAACTCAATGTAAAACCAAATATCCAGAACCCTGACCCTGCCGTG


 Y   Q   L   R   D   S   K   S   S   D   K   S   V   C   L   F   T   D   F   D
TACCAGCTGAGAGACTCTAAATCCAGTGACAAGTCTGTCTGCCTATTCACCGATTTTGAT


 S   Q   T   N   V   S   Q   S   K   D   S   D   V   Y   I   T   D   K   T   V
TCTCAAACAAATGTGTCACAAAGTAAGGATTCTGATGTGTATATCACAGACAAAACTGTG


 L   D   M   R   S   M   D   F   K   S   N   S   A   V   A   W   S   N   K   S
CTAGACATGAGGTCTATGGACTTCAAGAGCAACAGTGCTGTGGCCTGGAGCAACAAATCT


 D   F   A   C   A   N   A   F   N   N   S   I   I   P   E   D   T   F   F   P
GACTTTGCATGTGCAAACGCCTTCAACAACAGCATTATTCCAGAAGACACCTTCTTCCCC
```

<TCR alfa linker c-jun>
```
 S   P   E   S   S   P   G   G   R   I   A   R   L   E   E   K   V   K   T   L
AGCCCAGAAAGTTCCcccgggGGTAGAATCGCCCGGCTGGAGGAAAAAGTGAAAACCTTG


 K   A   Q   N   S   E   L   A   S   T   A   N   M   L   R   E   Q   V   A   Q
AAAGCTCAGAACTCGGAGCTGGCGTCCACGGCCAACATGCTCAGGGAACAGGTGGCACAG


 L   K   Q   K   V   M   N   Y   *
CTTAAACAGAAAGTCATGAACTACTAG
```

FIGURE 26

TCR beta>
```
M   K   A   G   V   T   Q   T   P   R   Y   L   I   K   T   R   G   Q   Q   V
ATGAAAGCTGGAGTTACTCAAACTCCAAGATATCTGATCAAAACGAGAGGACAGCAAGTG

T   L   S   C   S   P   I   S   G   H   R   S   V   S   W   Y   Q   Q   T   P
ACACTGAGCTGCTCCCCTATCTCTGGGCATAGGAGTGTATCCTGGTACCAACAGACCCCA

G   Q   G   L   Q   F   L   F   E   Y   F   S   E   T   Q   R   N   K   G   N
GGACAGGGCCTTCAGTTCCTCTTTGAATACTTCAGTGAGACACAGAGAAACAAAGGAAAC

F   P   G   R   F   S   G   R   Q   F   S   N   S   R   S   E   M   N   V   S
TTCCCTGGTCGATTCTCAGGGCGCCAGTTCTCTAACTCTCGCTCTGAGATGAATGTGAGC

T   L   E   L   G   D   S   A   L   Y   L   C   A   S   S   F   D   S   G   N
ACCTTGGAGCTGGGGGACTCGGCCCTTTATCTTTGCGCCAGCAGCTTCGACAGCGGGAAT

S   P   L   H   F   G   N   G   T   R   L   T   V   T   E   D   L   N   K   V
TCACCCCTCCACTTTGGGAACGGGACCAGGCTCACTGTGACAGAGGACCTGAACAAGGTG

F   P   P   E   V   A   V   F   E   P   S   E   A   E   I   S   H   T   Q   K
TTCCCACCCGAGGTCGCTGTGTTTGAGCCATCAGAAGCAGAGATCTCCCACACCCAAAAG

A   T   L   V   C   L   A   T   G   F   F   P   D   H   V   E   L   S   W   W
GCCACACTGGTGTGCCTGGCCACAGGCTTCTTCCCTGACCACGTGGAGCTGAGCTGGTGG

V   N   G   K   E   V   H   S   G   V   S   Q   D   P   Q   P   L   K   E   Q
GTGAATGGGAAGGAGGTGCACAGTGGGGTCAGCCAGGACCCGCAGCCCCTCAAGGAGCAG

P   A   L   N   D   S   R   Y   S   L   S   S   R   L   R   V   S   A   T   F
CCCGCCCTCAATGACTCCAGATACAGCCTGAGCAGCCGCCTGAGGGTCTCGGCCACCTTC

W   Q   N   P   R   N   H   F   R   C   Q   V   Q   F   Y   G   L   S   E   N
TGGCAGAACCCCCGCAACCACTTCCGCTGTCAAGTCCAGTTCTACGGGCTCTCGGAGAAT

D   E   W   T   Q   D   R   A   K   P   V   T   Q   I   V   S   A   E   A   W
GACGAGTGGACCCAGGATAGGGCCAAACCTGTCACCCAGATCGTCAGCGCCGAGGCCTGG
```

<TCR beta linker c-fos>
```
G   R   A   D   P   G   G   L   T   D   T   L   Q   A   E   T   D   Q   L   E
GGTAGAGCAGACcccgggGGTCTGACTGATACACTCCAAGCGGAGACAGATCAACTTGAA

D   K   K   S   A   L   Q   T   E   I   A   N   L   L   K   E   K   E   K   L
GACAAGAAGTCTGCGTTGCAGACCGAGATTGCCAATCTACTGAAAGAGAAGGAAAAACTA

E   F   I   L   A   A   Y   *
GAGTTCATCCTGGCAGCTTACTAG
```

FIGURE 27

TCR alfa>
M Q K E V E Q N S G P L S V P E G A I A
atgCAGAAGGAAGTGGAGCAGAACTCTGGACCCCTCAGTGTTCCAGAGGGAGCCATTGCC

S L N C T Y S D R G S Q S F F W Y R Q Y
TCTCTCAACTGCACTTACAGTGACCGAGGTTCCCAGTCCTTCTTCTGGTACAGACAATAT

S G K S P E L I M S I Y S N G D K E D G
TCTGGGAAAAGCCCCTGAGTTGATAATGTCCATATACTCCAATGGTGACAAAGAAGATGGA

R F T A Q L N K A S Q Y V S L L I R D S
AGGTTTACAGCACAGCTCAATAAAGCCAGCCAGTATGTTTCTCTGCTCATCAGAGACTCC

Q P S D S A T Y L C A V T T D S W G K L
CAGCCCAGTGATTCAGCCACCTACCTCTGTGCCGTTACAACTGACAGCTGGGGGAAATTG

Q F G A G T Q V V V T P D I Q N P D P A
CAGTTTGGAGCAGGGACCCAGGTTGTGGTCACCCCAGATATCCAGAACCCTGACCCTGCC

V Y Q L R D S K S S D K S V C L F T D F
GTGTACCAGCTGAGAGACTCTAAATCCAGTGACAAGTCTGTCTGCCTATTCACCGATTTT

D S Q T N V S Q S K D S D V Y I T D K T
GATTCTCAAACAAATGTGTCACAAAGTAAGGATTCTGATGTGTATATCACAGACAAAACT

V L D M R S M D F K S N S A V A W S N K
GTGCTAGACATGAGGTCTATGGACTTCAAGAGCAACAGTGCTGTGGCCTGGAGCAACAAA

S D F A C A N A F N N S I I P E D T F F
TCTGACTTTGCATGTGCAAACGCCTTCAACAACAGCATTATTCCAGAAGACACCTTCTTC

<TCR alfa linker c-jun>
P S P E S S P G G R I A R L E E K V K T
CCCAGCCCAGAAAGTTCCcccgggGGTAGAATCGCCCGGCTGGAGGAAAAAGTGAAAACC

L K A Q N S E L A S T A N M L R E Q V A
TTGAAAGCTCAGAACTCGGAGCTGGCGTCCACGGCCAACATGCTCAGGGAACAGGTGGCA

Q L K Q K V M N Y *
CAGCTTAAACAGAAAGTCATGAACTACTAG

FIGURE 28

TCR beta>
M   N   A   G   V   T   Q   T   P   K   F   Q   V   L   K   T   G   Q   S   M
atgAACGCTGGTGTCACTCAGACCCCAAAATTCCAGGTCCTGAAGACAGGACAGAGCATG

T   L   Q   C   A   Q   D   M   N   H   E   Y   M   S   W   Y   R   Q   D   P
ACACTGCAGTGTGCCCAGGATATGAACCATGAATACATGTCCTGGTATCGACAAGACCCA

G   M   G   L   R   L   I   H   Y   S   V   G   A   G   I   T   D   Q   G   E
GGCATGGGGCTGAGGCTGATTCATTACTCAGTTGGTGCTGGTATCACTGACCAAGGAGAA

V   P   N   G   Y   N   V   S   R   S   T   T   E   D   F   P   L   R   L   L
GTCCCCAATGGCTACAATGTCTCCAGATCAACCACAGAGGATTTCCCGCTCAGGCTGCTG

S   A   A   P   S   Q   T   S   V   Y   F   C   A   S   R   P   G   L   A   G
TCGGCTGCTCCCTCCCAGACATCTGTGTACTTCTGTGCCAGCAGGCCGGGACTAGCGGCA

G   R   P   E   Q   Y   F   G   P   G   T   R   L   T   V   T   E   D   L   K
GGGCGACCAGAGCAGTACTTCGGGCCCGGGCACCAGGCTCACGGTCACAGAGGACCTGAAA

N   V   F   P   P   E   V   A   V   F   E   P   S   E   A   E   I   S   H   T
AACGTGTTCCCACCCGAGGTCGCTGTGTTTGAGCCATCAGAAGCAGAGATCTCCCACACC

Q   K   A   T   L   V   C   L   A   T   G   F   Y   P   D   H   V   E   L   S
CAAAAGGCCACACTGGTGTGCCTGGCCACAGGCTTCTACCCCGACCACGTGGAGCTGAGC

W   W   V   N   G   K   E   V   H   S   G   V   S   T   D   P   Q   P   L   K
TGGTGGGTGAATGGGAAGGAGGTGCACAGTGGGGTCAGCACAGACCCGCAGCCCCTCAAG

E   Q   P   A   L   N   D   S   R   Y   A   L   S   S   R   L   R   V   S   A
GAGCAGCCCGCCCTCAATGACTCCAGATACgctCTGAGCAGCCGCCTGAGGGTCTCGGCC

T   F   W   Q   N   P   R   N   H   F   R   C   Q   V   Q   F   Y   G   L   S
ACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGTCAAGTCCAGTTCTACGGGCTCTCG

E   N   D   E   W   T   Q   D   R   A   K   P   V   T   Q   I   V   S   A   E
GAGAATGACGAGTGGACCCAGGATAGGGCCAAACCTGTCACCCAGATCGTCAGCGCCGAG

<TCR beta linker c-fos>
A   W   G   R   A   D   P   G   G   L   T   D   T   L   Q   A   E   T   D   Q
GCCTGGGGTAGAGCAGACcccgggGGTCTGACTGATACACTCCAAGCGGAGACAGATCAA

Continued ....

FIGURE 28 (continued)

```
   L   E   D   K   K   S   A   L   Q   T   E   I   A   N   L   L   K   E   K   E
CTTGAAGACAAGAAGTCTGCGTTGCAGACCGAGATTGCCAATCTACTGAAAGAGAAGGAA
```

```
                                     linker  Biotinylation  tag>
   K   L   E   F   I   L   A   A   Y   G   S   G   G   G   L   N   D   I   F   E
AAACTAGAGTTCATCCTGGCAGCTTACggatccGGTGGTGGTCTGAACGATATTTTTGAA
```

```
   A   Q   K   I   E   W   H   *
GCTCAGAAAATCGAATGGCATTAAGCTT
```

FIGURE 29

TCR alfa>
M Q Q K N D D Q Q V K Q N S P S L S V Q
atgCAACAGAAGAATGATGACCAGCAAGTTAAGCAAAATTCACCATCCCTGAGCGTCCAG

E G R I S I L N C D Y T N S M F D Y F L
GAAGGAAGAATTTCTATTCTGAACTGTGACTATACTAACAGCATGTTTGATTATTTCCTA

W Y K K Y P A E G P T F L I S I S S I K
TGGTACAAAAAATACCCTGCTGAAGGTCCTACATTCCTGATATCTATAAGTTCCATTAAG

D K N E D G R F T V F L N K S A K H L S
GATAAAAATGAAGATGGAAGATTCACTGTCTTCTTAAACAAAAGTGCCAAGCACCTCTCT

L H I V P S Q P G D S A V Y F C A A M E
CTGCACATTGTGCCCTCCCAGCCTGGAGACTCTGCAGTGTACTTCTGTGCAGCAATGGAG

G A Q K L V F G Q G T R L T I N P N I Q
GGAGCCCAGAAGCTGGTATTTGGCCAAGGAACCAGGCTGACTATCAACCCAAATATCCAG

N P D P A V Y Q L R D S K S S D K S V C
AACCCTGACCCTGCCGTGTACCAGCTGAGAGACTCTAAATCCAGTGACAAGTCTGTCTGC

L F T D F D S Q T N V S Q S K D S D V Y
CTATTCACCGATTTTGATTCTCAAACAAATGTGTCACAAAGTAAGGATTCTGATGTGTAT

I T D K T V L D M R S M D F K S N S A V
ATCACAGACAAAACTGTGCTAGACATGAGGTCTATGGACTTCAAGAGCAACAGTGCTGTG

A W S N K S D F A C A N A F N N S I I P
GCCTGGAGCAACAAATCTGACTTTGCATGTGCAAACGCCTTCAACAACAGCATTATTCCA

<TCR alfa linker c-jun>
E D T F F P S P E S S P G G R I A R L E
GAAGACACCTTCTTCCCCAGCCCAGAAAGTTCCccggggGGTAGAATCGCCCGGCTGGAG

E K V K T L K A Q N S E L A S T A N M L
GAAAAAGTGAAAACCTTGAAAGCTCAGAACTCGGAGCTGGCGTCCACGGCCAACATGCTC

R E Q V A Q L K Q K V M N Y *
AGGGAACAGGTGGCACAGCTTAAACAGAAAGTCATGAACTACTAG

FIGURE 30

TCR beta>

```
M   N   A   G   V   T   Q   T   P   K   F   Q   V   L   K   T   G   Q   S   M
atgAACGCTGGTGTCACTCAGACCCCAAAATTCCAGGTCCTGAAGACAGGACAGAGCATG

T   L   Q   C   A   Q   D   M   N   H   E   Y   M   S   W   Y   R   Q   D   P
ACACTGCAGTGTGCCCAGGATATGAACCATGAATACATGTCCTGGTATCGACAAGACCCA

G   M   G   L   R   L   I   H   Y   S   V   G   A   G   I   T   D   Q   G   E
GGCATGGGGCTGAGGCTGATTCATTACTCAGTTGGTGCTGGTATCACTGACCAAGGAGAA

V   P   N   G   Y   N   V   S   R   S   T   T   E   D   F   P   L   R   L   L
GTCCCCAATGGCTACAATGTCTCCAGATCAACCACAGAGGATTTCCCGCTCAGGCTGCTG

S   A   A   P   S   Q   T   S   V   Y   F   C   A   S   S   Y   P   G   G   G
TCGGCTGCTCCCTCCCAGACATCTGTGTACTTCTGTGCCAGCAGTTACCaGGaGGGGGGG

F   Y   E   Q   Y   F   G   P   G   T   R   L   T   V   T   E   D   L   K   N
TTTTACGAGCAGTACTTCGGGCCCGGGCACCAGGCTCACGGTCACAGAGGACCTGAAAAAC

V   F   P   P   E   V   A   V   F   E   P   S   E   A   E   I   S   H   T   Q
GTGTTCCCACCCGAGGTCGCTGTGTTTGAGCCATCAGAAGCAGAGATCTCCCACACCCAA

K   A   T   L   V   C   L   A   T   G   F   Y   P   D   H   V   E   L   S   W
AAGGCCACACTGGTGTGCCTGGCCACAGGCTTCTACCCCGACCACGTGGAGCTGAGCTGG

W   V   N   G   K   E   V   H   S   G   V   S   T   D   P   Q   P   L   K   E
TGGGTGAATGGGAAGGAGGTGCACAGTGGGGTCAGCACAGACCCGCAGCCCCTCAAGGAG

Q   P   A   L   N   D   S   R   Y   A   L   S   S   R   L   R   V   S   A   T
CAGCCCGCCCTCAATGACTCCAGATACgctCTGAGCAGCCGCCTGAGGGTCTCGGCCACC

F   W   Q   D   P   R   N   H   F   R   C   Q   V   Q   F   Y   G   L   S   E
TTCTGGCAGgACCCCCGCAACCACTTCCGCTGTCAAGTCCAGTTCTACGGGCTCTCGGAG

N   D   E   W   T   Q   D   R   A   K   P   V   T   Q   I   V   S   A   E   A
AATGACGAGTGGACCCAGGATAGGGCCAAAACCCGTCACCCAGATCGTCAGCGCCGAGGCC
```

Continued......

FIGURE 30 (continued)

<TCR beta <u>linker</u> c-fos>

W   G   R   A   D   P   G   G   L   T   D   T   L   Q   A   E   T   D   Q   L

TGGGGTAGAGCCAGACcccgggGGTCTGACTGATACACTCCAAGCGGAGACAGATCAACTT

E   D   K   K   S   A   L   Q   T   E   I   A   N   L   L   K   E   K   E   K

GAAGACAAGAAGTCTGCGTTGCAGACCGAGATTGCCAATCTACTGAAAGAGAAGGAAAAA

<u>linker</u> Biotinylation tag>

L   E   F   I   L   A   A   Y   G   S   G   G   G   L   N   D   I   F   E   A

CTAGAGTTCATCCTGGCAGCTTACggatccGGTGGTGGTCTGAACGATATTTTTGAAGCT

Q   K   I   E   W   H   *

CAGAAAATCGAATGGCATTAAGCTT

FIGURE 31

TCR beta>

```
    M  N  A  G  V  T  Q  T  P  K  F  Q  V  L  K  T  G  Q  S  M
atgAACGCTGGTGTCACTCAGACCCCAAAATTCCAGGTCCTGAAGACAGGACAGAGCATG

    T  L  Q  C  A  Q  D  M  N  H  E  Y  M  S  W  Y  R  Q  D  P
ACACTGCAGTGTGCCCAGGATATGAACCATGAATACATGTCCTGGTATCGACAAGACCCA

    G  M  G  L  R  L  I  H  Y  S  V  G  A  G  I  T  D  Q  G  E
GGCATGGGGCTGAGGCTGATTCATTACTCAGTTGGTGCTGGTATCACTGACCAAGGAGAA

    V  P  N  G  Y  N  V  S  R  S  T  T  E  D  F  P  L  R  L  L
GTCCCCAATGGCTACAATGTCTCCAGATCAACCACAGAGGATTTCCCGCTCAGGCTGCTG

    S  A  A  P  S  Q  T  S  V  Y  F  C  A  S  R  P  G  L  A  G
TCGGCTGCTCCCTCCCAGACATCTGTGTACTTCTGTGCCAGCAGGCCGGGACTAGCGGGA

    G  R  P  E  Q  Y  F  G  P  G  T  R  L  T  V  T  E  D  L  K
GGGCGACCAGAGCAGTACTTCGGGCCGGGCACCAGGCTCACGGTCACAGAGGACCTGAAA

    N  V  F  P  P  E  V  A  V  F  E  P  S  E  A  E  I  S  H  T
AACGTGTTCCCACCCGAGGTCGCTGTGTTTGAGCCATCAGAAGCAGAGATCTCCCACACC

    Q  K  A  T  L  V  C  L  A  T  G  F  Y  P  D  H  V  E  L  S
CAAAAGGCCACACTGGTGTGCCTGGCCACAGGCTTCTACCCCGACCACGTGGAGCTGAGC

    W  W  V  N  G  K  E  V  H  S  G  V  S  T  D  P  Q  P  L  K
TGGTGGGTGAATGGGAAGGAGGTGCACAGTGGGGTCAGCACAGACCCGCAGCCCCTCAAG

    E  Q  P  A  L  N  D  S  R  Y  A  L  S  S  R  L  R  V  S  A
GAGCAGCCCGCCCTCAATGACTCCAGATACgctCTGAGCAGCCGCCTGAGGGTCTCGGCC

    T  F  W  Q  D  P  R  N  H  F  R  C  Q  V  Q  F  Y  G  L  S
ACCTTCTGGCAGgACCCCCGCAACCACTTCCGCTGTCAAGTCCAGTTCTACGGGCTCTCG

    E  N  D  E  W  T  Q  D  R  A  K  P  V  T  Q  I  V  S  A  E
GAGAATGACGAGTGGACCCAGGATAGGGCCAAACCTGTCACCCAGATCGTCAGCGCCGAG
```

Continued....

FIGURE 31 (continued)

```
                    <TCR beta linker c-fos>
     A   W   G   R   A   D   P   G   G   L   T   D   T   L   Q   A   E   T   D   Q
    GCCTGGGGTAGAGCAGACcccgggGGTCTGACTGATACACTCCAAGCGGAGACAGATCAA


     L   E   D   K   K   S   A   L   Q   T   E   I   A   N   L   L   K   E   K   E
    CTTGAAGACAAGAAGTCTGCGTTGCAGACCGAGATTGCCAATCTACTGAAAGAGAAGGAA

                                    linker Biotinylation tag>
     K   L   E   F   I   L   A   A   Y   G   S   G   G   G   L   N   D   I   F   E
    AAACTAGAGTTCATCCTGGCAGCTTACggatccGGTGGTGGTCTGAACGATATTTTTGAA


     A   Q   K   I   E   W   H   *
    GCTCAGAAAATCGAATGGCATTAAGCTT
```

FIGURE 32

Linker<-> fos

```
      P   G   G   L   T   D   T   L   Q   A   E   T   D   Q
5'-  ccc ggg GGT CTG ACT GAT ACA CTC CAA GCG GAG ACA GAT CAA
     Xma I
```

```
      L   E   D   K   K   S   A   L   Q   T   E   I   A   N   L
     CTT GAA GAC AAG AAG TCT GCG TTG CAG ACC GAG ATT GCC AAT CTA
```

```
                                                      <-lin
      L   K   E   K   E   K   L   E   F   I   L   A   A   Y   G
     CTG AAA GAG AAG GAA AAA CTA GAG TTC ATC CTG GCA GCT TAC gga
                                                           Bam
```

Ker-> <- biotinylation tag

```
      S   G   G   G   L   N   D   I   F   E   A   Q   K   I   E
     tcc GGT GGT GGT CTG AAC GAT ATT TTT GAA GCT CAG AAA ATC GAA
     HI
```

```
      W   H   *
     TGG CAT TAA GCT T -3'
              Hind III
```

FIGURE 33

A
Reverse primer:

5'-ACACAC GGA TCC GTA AGC TGC GAC GAT GAA CTC GAT TTT CTT-
3'
　　　　　　Bam HI

SEQ ID NO 78

FIGURE 34

a. 1   2   3   4   5   b. 1   2   3

c. 1   2   3   4   5   6   7   8

45/60
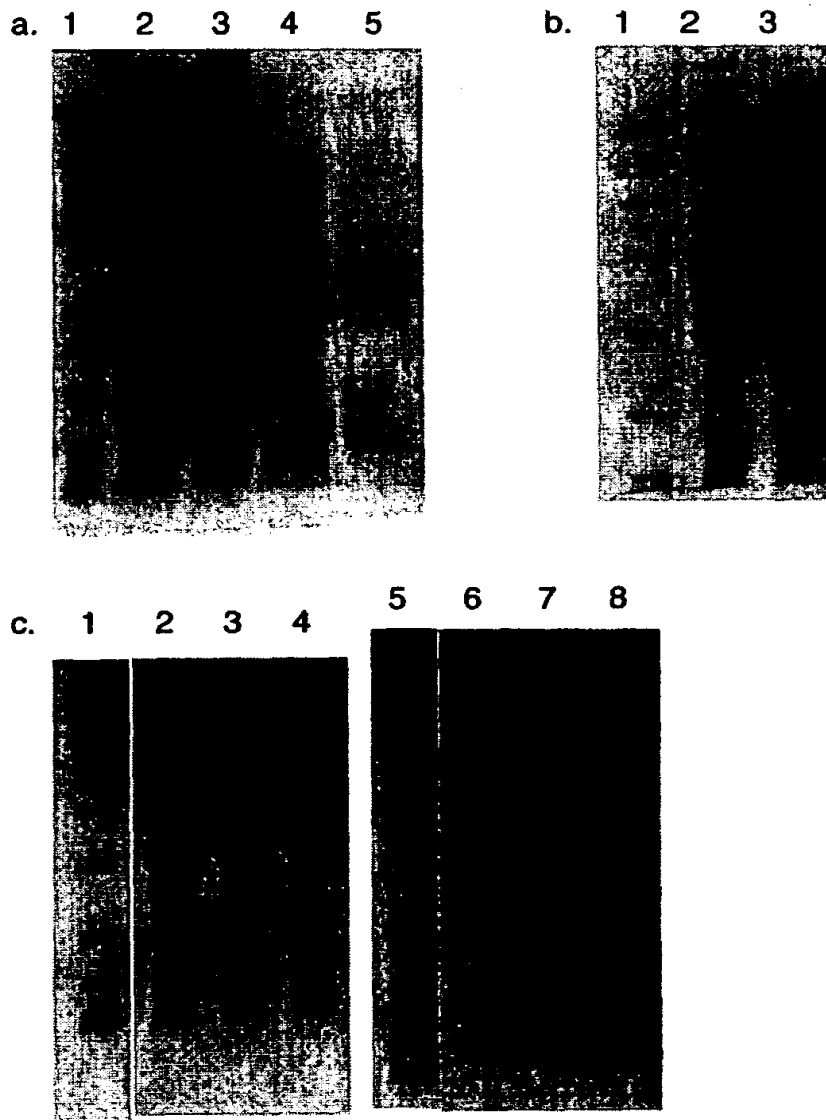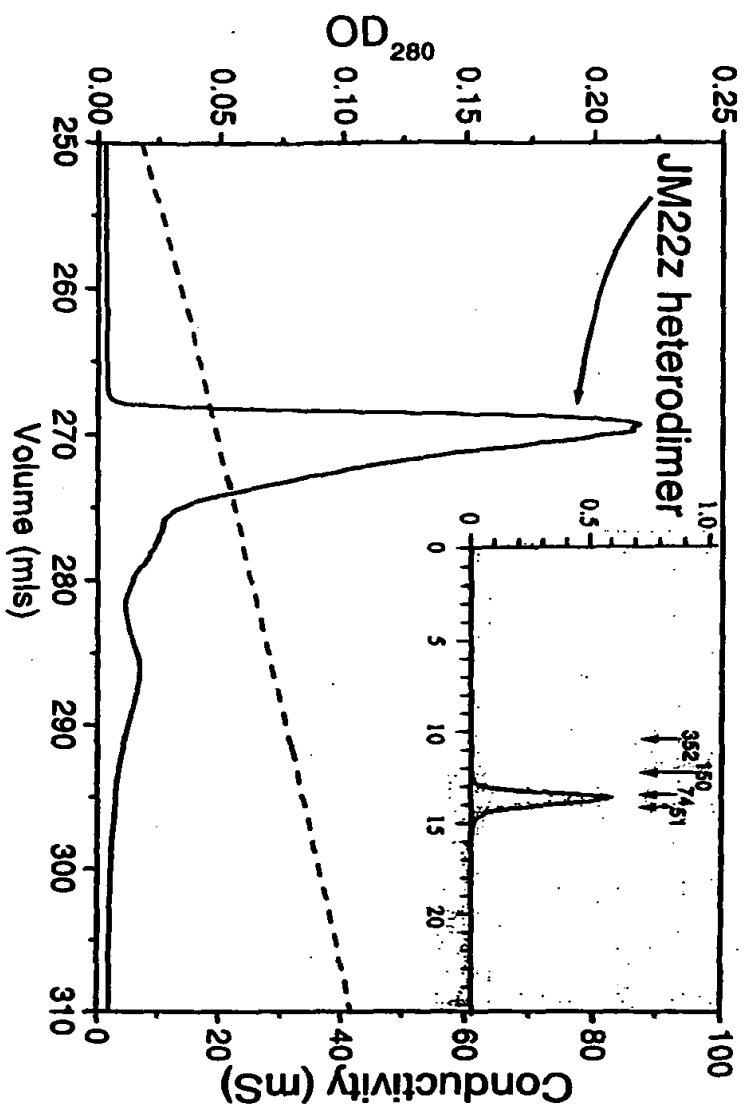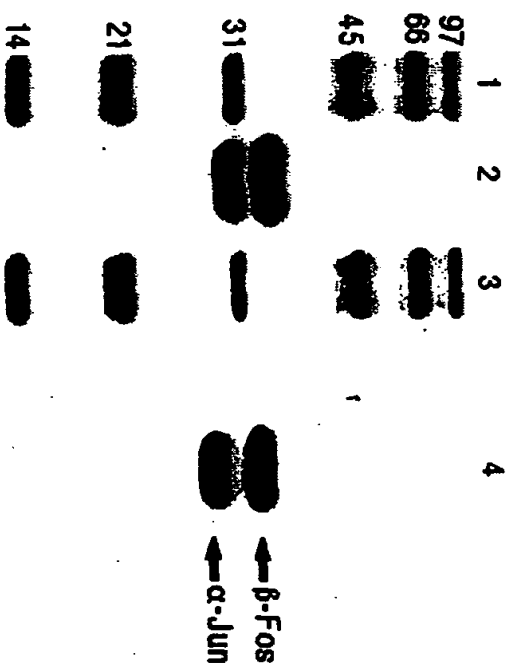
FIGURE 35

FIGURE 36

Figure 37ai

Taxtccr05.bio -

Figure 37 bi

Taxtcr04.bia –
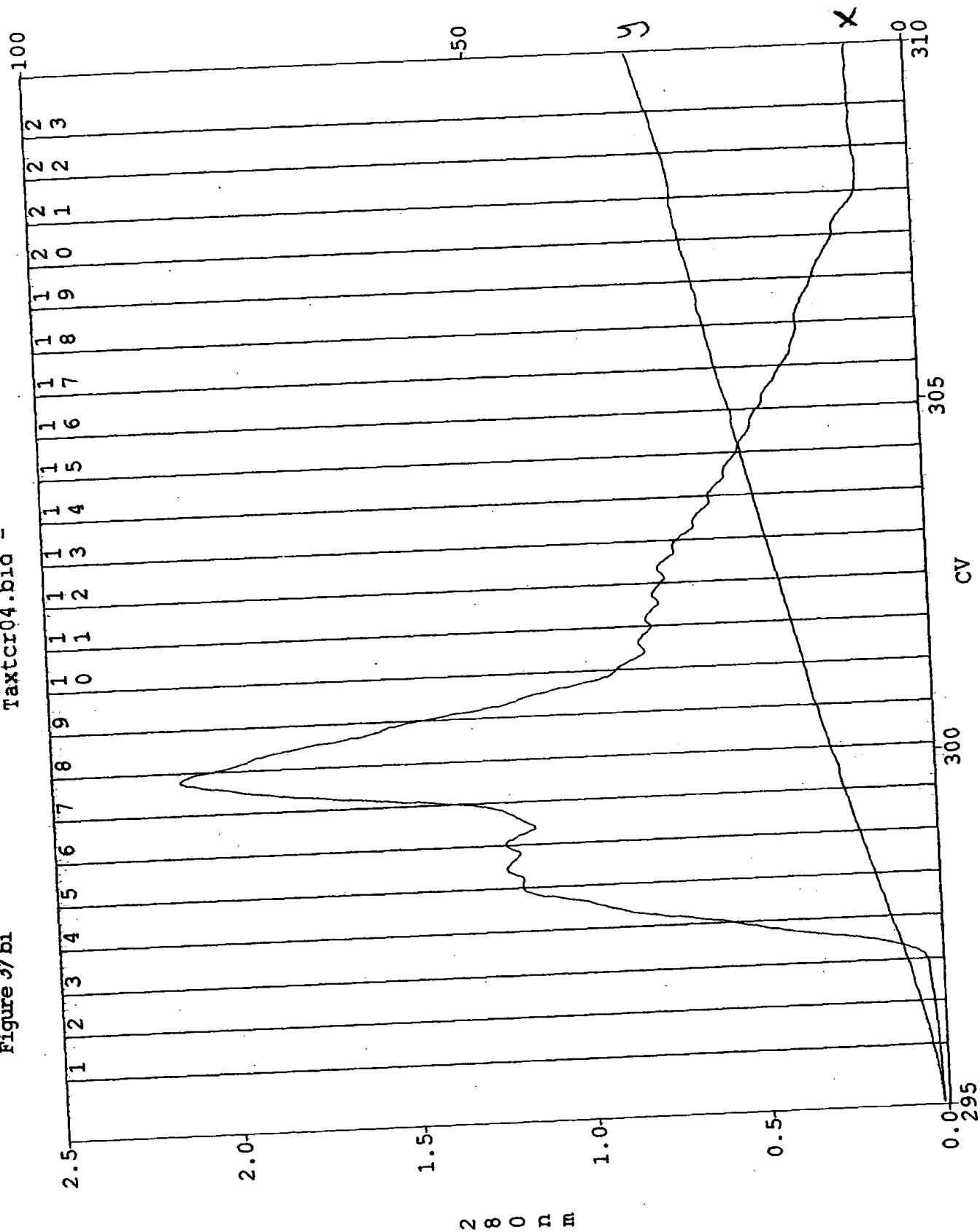
FIGURE 37

a.ii. 1 2 3 4 5 6 7 8 9 10 11   a.iii. 1 2

b.ii. 1 2 3 4 5 6 7 8 9 10   b.iii. 1 2 3

FIGURE 38

a.

1   2   3   4   5

b.

1   2   3   4   5
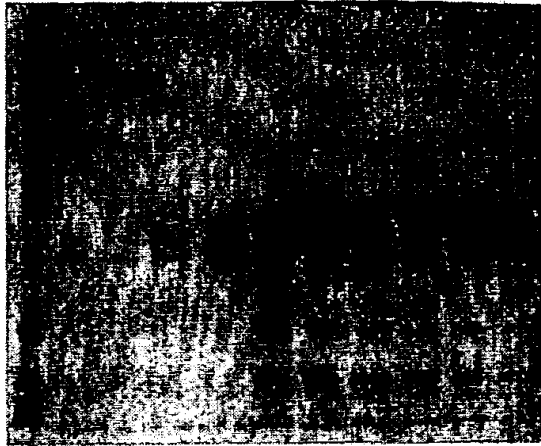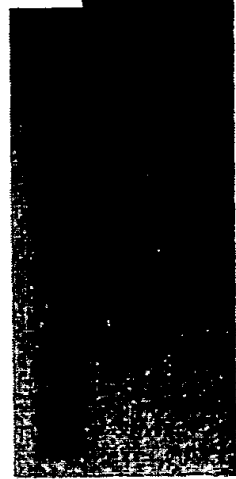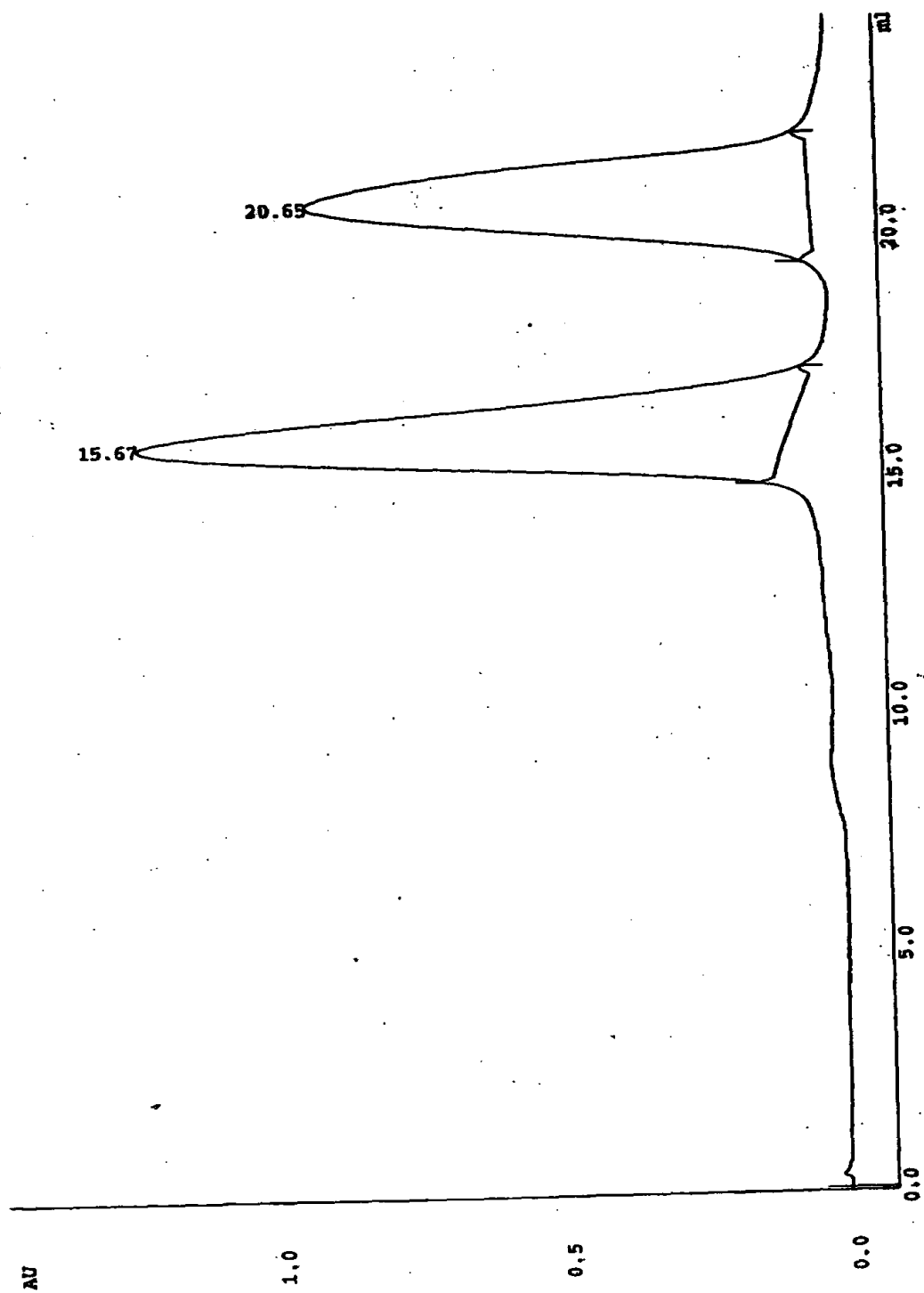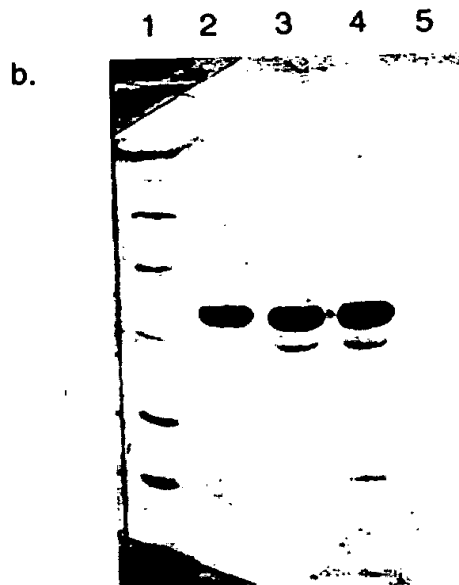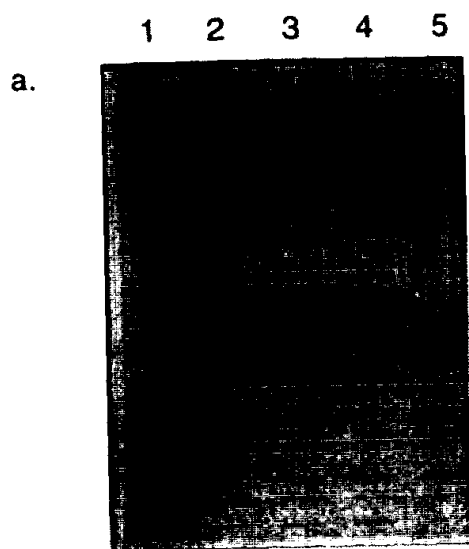
Figure 39

FIGURE 40
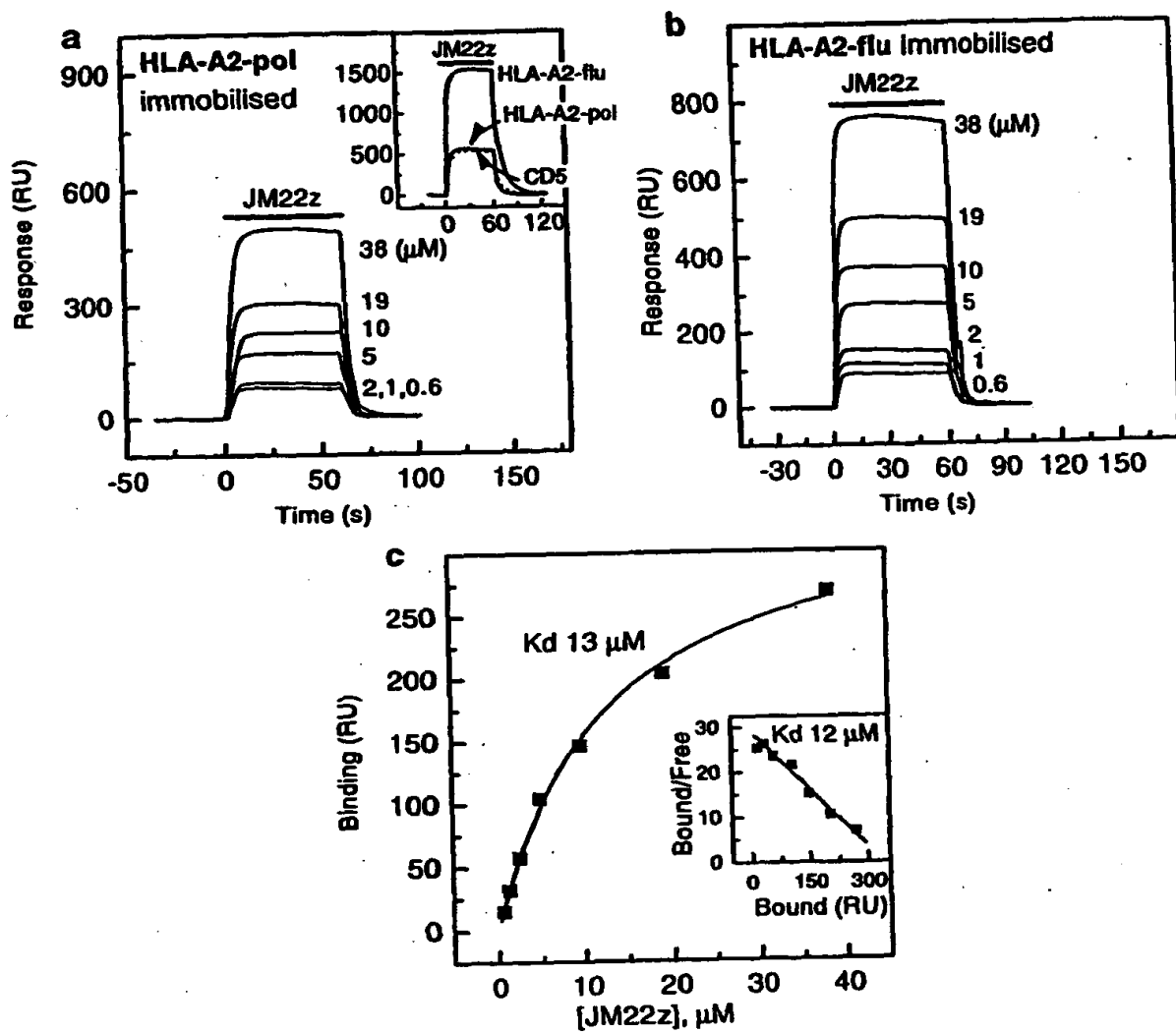
jon02b Fc=1 - 1

FIGURE 41

FIGURE 42

FIGURE 43

FIGURE 44

FIGURE 45

A.

B.
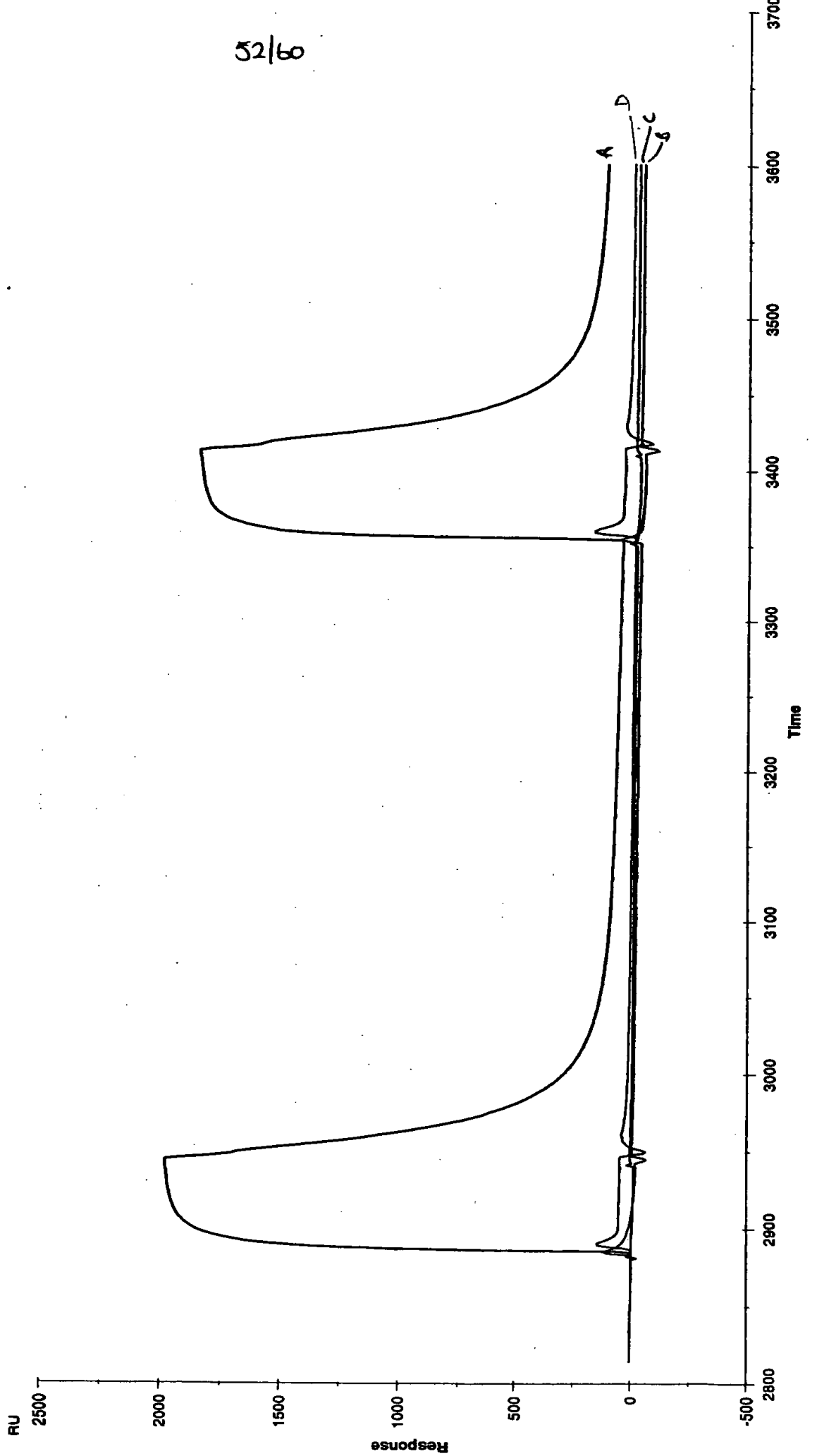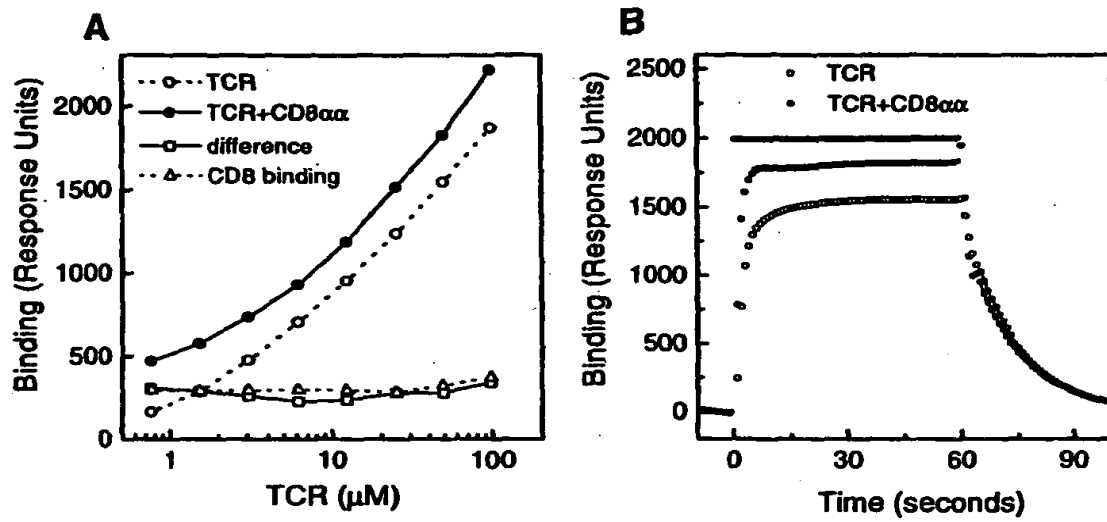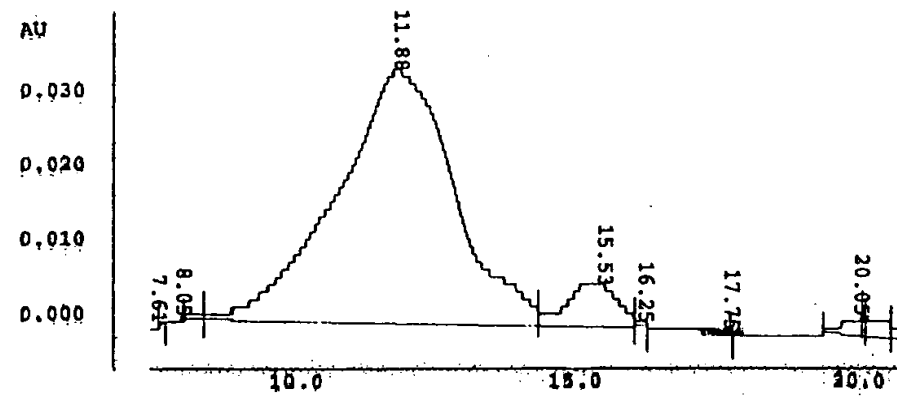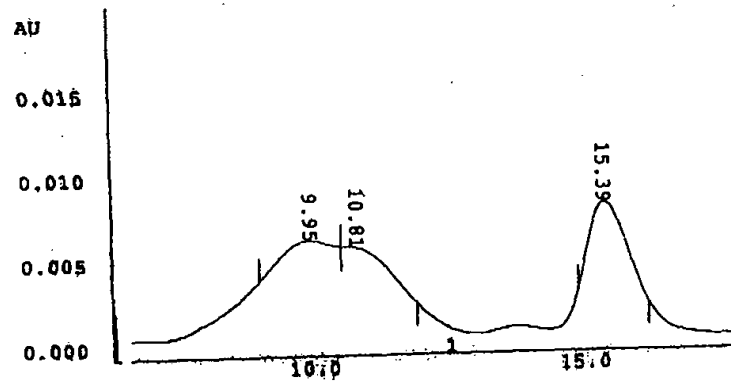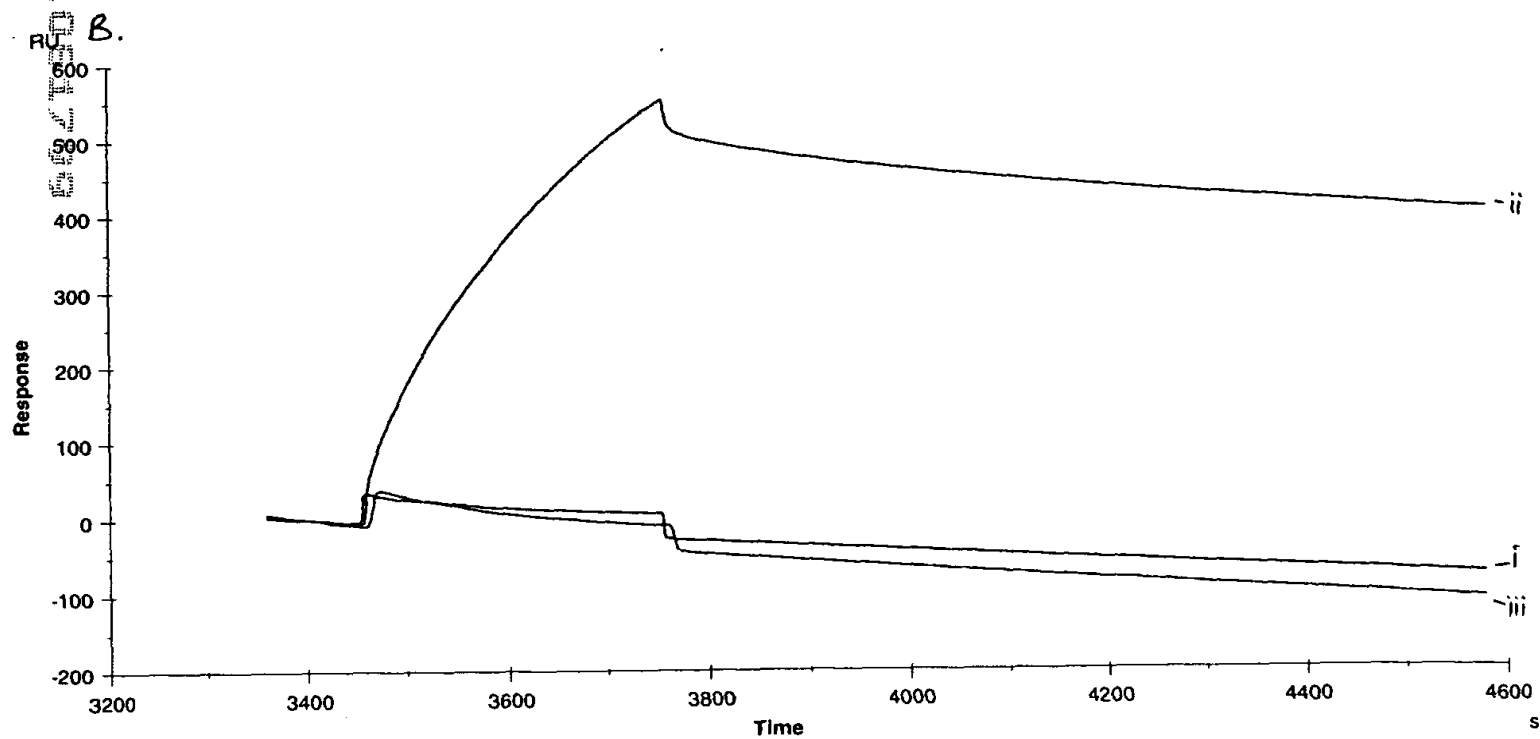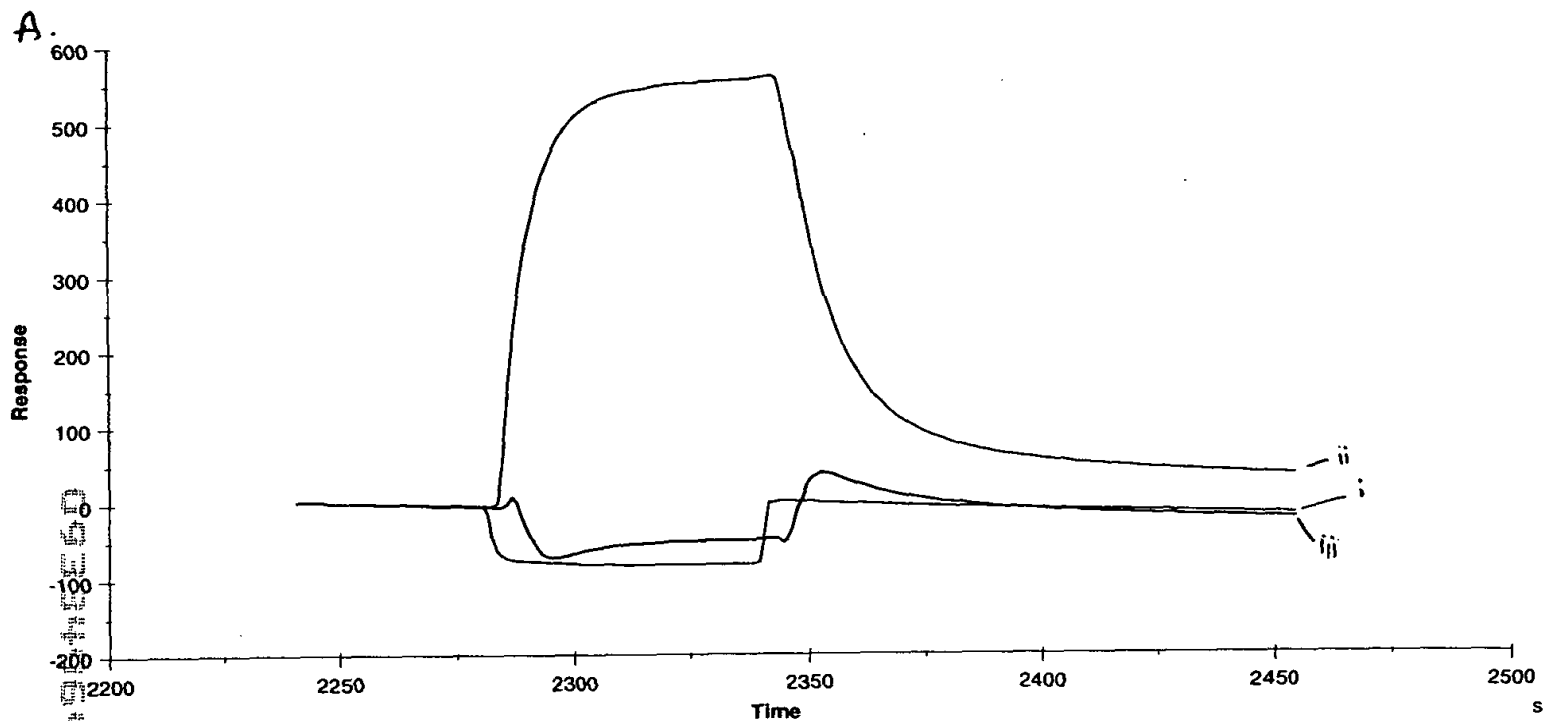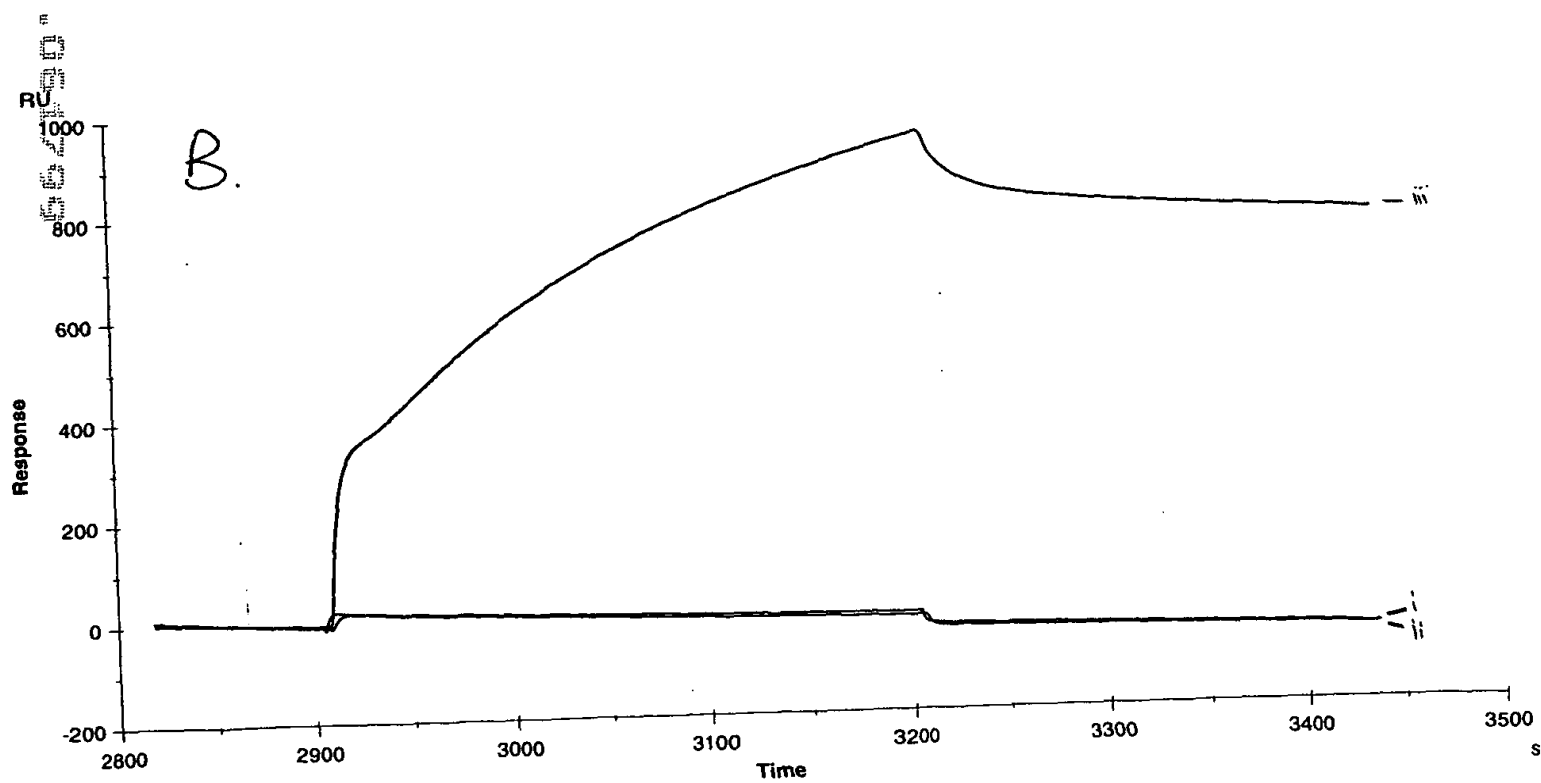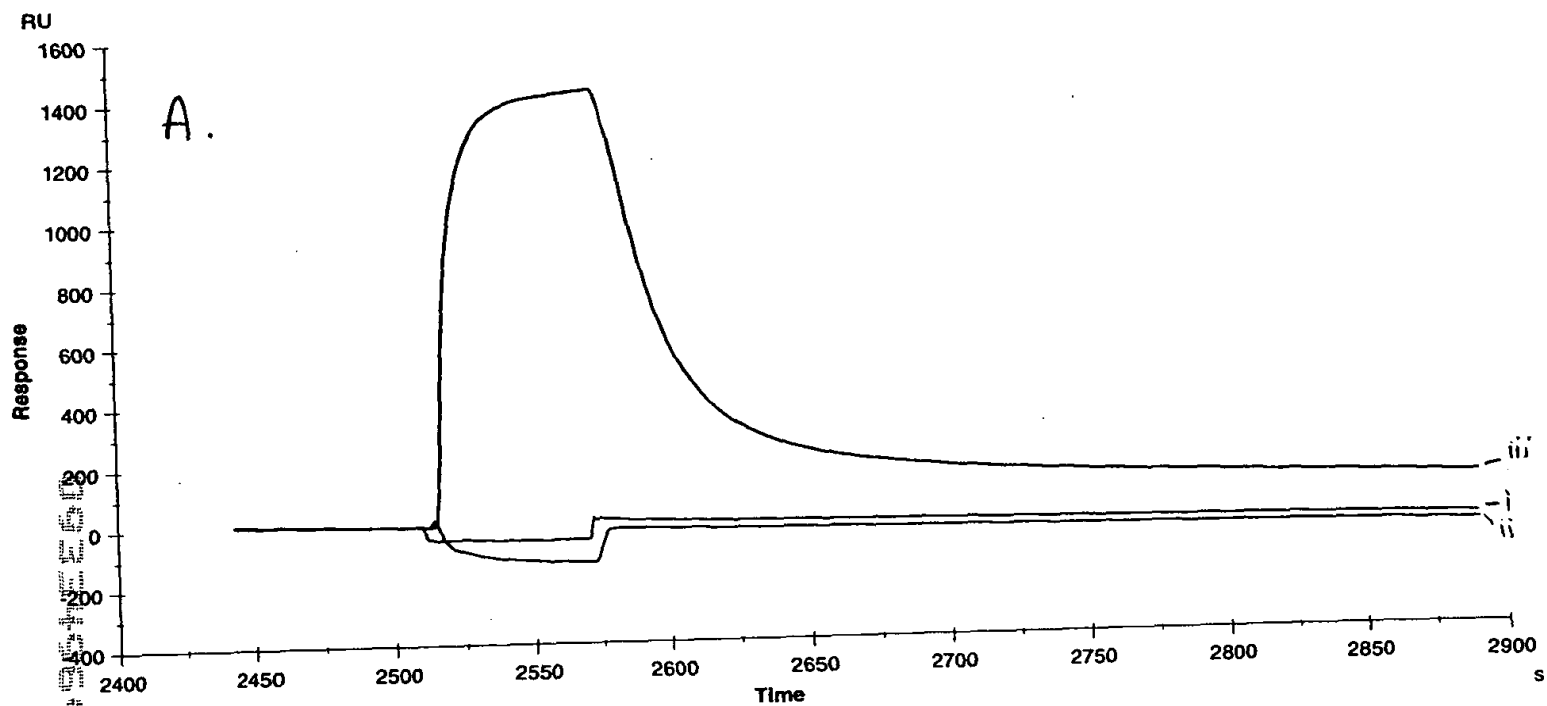
FIGURE 46

FIGURE 47

FIGURE 48

FIGURE 49